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ORIGINAL ARTICLES.

THE ANTI-TUBERCULOSIS MOVEMENT IN ITALY.

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The Anti-Tuberculosis Movement, so far, has made but little progress in Italy. There has been no popular agitation and but little active campaign for the checking of tuberculosis. During the last few years our energies have rather been directed to the development of a full programme of hygienic reform in town and country, among corporations and local boards, through hospitals and even through the activities of pleasures, and, amidst all, measures have been taken to check the ravages of tuberculosis.

No one who approaches the subject with an open mind, and views it in relation with the state of affairs in other countries, can deny that in our public hygienic system we in Italy may fearlessly challenge comparison with any other nation. We may, indeed, go further, and assert that much that has happened lately proves clearly that, even judged by an ideal standard, our sanitary organization and national hygienic administration deserve praise rather than censure.

Up to recently we have preferred to devote our energies to the varied and complex work of hygienic reform, having for its aims the moral and economic elevation of the working classes by the raising of wages, insurance against accidents, and through legislation seeking the

prevention of diseases, especially those caused by certain conditions of labour. Through wise regulations on the part of our Central Government and the action of municipal bodies, provision has been made for the notification of the disease; regulation in the building and management of factories; the construction of workmen's buildings on hygienic and rational principles; the application, as far as possible, to old houses of modern sanitary methods; the hygienic treatment of pavements, drains, enclosed yards, and the like. It is true that in this way tuberculosis is not directly attacked, but it is none the less very effectively weakened. We may claim to have done in this general hygienic field of action, here in Italy, more than has been done elsewhere.

As regards procedures in regard to workmen's dwellings, the measures of the Italian Legislature may be classed under three headings: 1. Provision for loans. 2. Regulations as to construction, sale, and change of ownership; the expropriation of areas for hygienic reasons, and lightening of charges in such cases. 3. Concessions granted to certain bodies and to certain classes of Societies, and on special conditions, viz: (*a*) To Co-operative Societies for the construction and purchase of workmen's buildings, when by the rules of the society the annual dividend to be distributed among the shareholders is not to exceed 5 per cent.; (*b*) to Mutual Benefit Societies having a special department for the construction of cheap houses for their members; (*c*) to charitable institutions devoting themselves solely to the provision of accommodation for the poorest classes; (*d*) to corporate bodies and autonomous Boards which provide inexpensive housing; (*e*) to local authorities empowered to found independent Boards for cheap housing, and to lodge with these Boards the whole or a part of the capital already destined for this purpose.

Here reference should be made to a new institution, a special creation, which has no parallel elsewhere, if we except the "Municipal Board for Cheap Housing" at Trieste, and which suggested to Signor Luzzatti the idea of the new institution here, and served as a model to our legislators in its organization. We mean, of course, the Independent Board for Cheap Housing of the People, which is a kind of half-way station between municipalization and private initiative. This is a public body, yet enjoying full liberty of action. It was started in various cities and towns of Italy by contributions from municipal bodies, Savings Banks, Benefit and Loan Societies and other Societies, and by contributions of private individuals, many of whom were willing to lend their aid and to further its aim in meeting the want of hygienic house accommodation at low rents: (*a*) By building new houses, and by buying, exchanging, selling, and managing building land; (*b*) by making healthy habitations of houses already existing; (*c*) by undertaking the management of the workmen's buildings of the Commune

and other local bodies; (*d*) by letting the apartments in the above buildings to those who have the legal qualifications for occupying them; (*e*) by building and managing taverns for the people; (*f*) by granting or obtaining for Co-operative Societies land suitable for workmen's buildings below its market value, and, further, by providing those societies with loans or giving security for the same object; (*g*) by stimulating private enterprise, by means of premiums or otherwise, in the construction of workmen's buildings.

Independent Boards for Workmen's Buildings have been formed or are now in course of formation at Rome, Naples, Milan, Turin, Genoa, Bologna, Biella, Bergamo, Cremona, Piacenza, Modena, Mirandola, Perugia, Foligno, and Bari. Buildings are being constructed and managed by the local authorities at Venice, Padua, Vicenza, Brescia, Pavia, Lecco, Parma, and Florence. We may, therefore, fairly say that if the movement for the provision of cheap and healthy housing for the people is a new one in Italy, it has nevertheless been taken up with such energy and enthusiasm that the very best results may confidently be expected from it. It must not be forgotten, too, that the Government of Italy, in its system of finance hits wisely and hard at alcohol and tobacco, and by legislative control of the labour of women and children aims at preventing the degeneracy of the race. Further, we have the right to claim that, if hygienic work has so far proceeded among us in the main on general lines, special measures against the scourge of tuberculosis have not been wholly forgotten.

For the tuberculous poor we have at present in Italy one sanatorium, which is just about to be opened. The sanatorium at Prasomaso, in Valtellina, has 120 to 130 beds for the consumptives of the city and province of Milan. The sanatorium at Budrio is used at present as the isolating hospital for the consumptive patients of Bologna, pending the completion of the hospital which that city is now building for itself and destined to receive the sufferers from this disease. A third sanatorium, the one at Leghorn, may be considered as a sanatorium and hospital combined, for it receives consumptive patients in every stage of the disease. There is a sanatorium for criminals in the island of Pianosa, where, as its superintendent, Dr. Passini, informs us, seventy-nine patients have been under treatment since its opening, and with the very best results; an average of about 13 per cent. of recoveries have been obtained. Impressed by these results, the Italian Government has decided to enlarge the sanatorium at Pianosa by the construction of four additional buildings, and to found a similar institution out of the suppressed House of Correction at Montesarchio, so as to gain the advantage which accrues from its position high up in the hills.

In May, 1897, the Italian Government issued a circular which laid

down that, in our general hospitals, consumptive patients should be dealt with in special wards. This circular remained for some time a dead letter; and, when acted on later, often produced a state of things that was positively intolerable. The sufferers from tuberculosis were shut up in infirmaries such as certainly left much to be desired, as those of the better class were generally reserved for the more critical medical and surgical cases. The isolation, too, was in most cases imperfect, owing to the necessity of passing to and from the ordinary wards and the consumption pavilions, and to the existence of courts and gardens common to both. The want of verandas and balconies where the sick could sit and rest, and gardens or open shady spots, prevented the patients from availing themselves of those physical forces which experience has shown to have such a powerful influence for good in this malady. Often, too, the rooms were close and dark, and did not allow the requisite cubic content of air, while the sick in them frequently exceeded the number they were intended to accommodate. Often, too, there was a want of proper arrangements for warming and ventilation. And everywhere there was a lack of recreation-rooms and dining-halls. Serious and slight cases were often herded together in the same ward. Patients and doctors alike were disgusted with this state of things, patients refusing to enter the special wards allotted them, and doctors often allowing consumptives to remain in the ordinary wards placed under their control and responsibility. This state of affairs became at last simply unendurable, and the need was generally felt of organizing a system at once more hygienic and more humane.

At Rome, in August, 1905, sufferers from consumption were isolated in the King Humbert I. Hospital, to which is annexed a dispensary for the prophylaxis and cure of tuberculosis. This hospital consisted, at first, of five buildings, three for men and two for women, with 250 beds in all; but necessity compelled the addition, during the three years that followed, of ten pavilions on the Döcker system and two on the Gay system (a Roman one), in the large garden surrounding the original buildings, the number of beds being thus raised to 450. In the five original buildings, which are each of two stories, the number of beds is 24 in each ward on the ground floor and 22 in those on the first floor, the latter being reserved for the graver cases. In all these wards the volume of air is 43·35 cubic metres per patient. The upper wards have a terrace at the south end, where the patients in the more advanced stages of the disease can lie all day in the open, on lounge chairs, sheltered by large movable awnings. In the garden below, there are verandas and little summer-houses for the open-air cure of the less severe cases. Wooden châlets serve as dining-halls and recreation-rooms.

Leghorn shelters its consumptives in the King Humbert I. Sanatorium of the United Royal Hospitals of that city. Owing its origin mainly to the philanthropy of Rosolino Orlando, and fostered with loving wisdom in its early days by Professor Queirolo of the University of Pisa, this institution is a hospital-sanatorium rather than a sanatorium proper, and receives patients in all stages of pulmonary consumption.

Venice in 1906 devoted to consumptive patients the hospital on the island of Santa Maria della Grazia, formerly used for sufferers from infectious diseases. For pureness of air it would be impossible to find a more advantageous position. The prevailing wind there is the south-east, or, in other words, the sea breeze, so that the air is kept free from dust and microbes. The wards are sunny and well-ventilated, and contain 58 beds. A Tollet awning and a Döcker shelter, turned into a veranda, enable the patients to pass many hours out-of-doors for the open-air cure. The excellent results obtained in the first two years, during which 297 patients were under treatment, 195 were discharged improved in health, many improved in a very marked degree, several kilograms heavier than when they entered, and evidently with less trouble, convinced the City Council of the necessity of enlarging the hospital so as to make it capable of receiving on the average 130 patients, adding also a ward for persons of moderate means as paying patients.

At Turin, the Pious Foundation of S. Luigi Gonzaga has founded a hospital-sanatorium in the suburbs, with the help of two subsidies of 1,000,000 francs and 50,000 francs from the local savings bank. It can hold 200 beds, and is furnished with covered galleries where invalids can lie and rest, recreation-rooms, and refectories. The rooms contain from one to five beds, and are large enough to allow each patient 30 to 60 cubic metres of air. This sanatorium cost about 1,450,000 francs (7,250 francs per bed), and was opened on October 21, 1909. Only the ground floor is at present in use, as the Foundation has not funds enough to do more. The patients are chosen from among the consumptive inmates of the old city hospital, those being preferred who seem to have the best chance of recovery, while the rest remain in their old quarters, but under more favourable conditions than in former days, as they are less crowded (being only 174 in number instead of 240), and much has been done to improve the hospital arrangements.

Bologna sends its poor consumptives to the Sanatorium at Budrio, which, as it can only hold seventy beds at the most, is not adequate for the purpose. The result is, that the consumptive patients who cannot be admitted there are necessarily kept in the general hospital, separated as much as possible from the rest. But Bologna is now building its

own hospital for its consumptives, though it can hardly be ready before the end of the present year.

Sondrio, thanks to the enlightened liberality of the Savings Bank Department of the Province of Lombardy, has built a small isolating ward for consumptives, close to its City hospital, with which it communicates by means of a covered gallery.

At Pisa, the Hospital Board, aided by grants from other Local Bodies, is now building a hospital for consumptives outside one of its gates (Porta a Piagge); and there is every reason to believe that the Board will push vigorously on with the work till it is completed.

Naples contemplates the building of an isolating hospital for consumptives, for which the City Council some time since voted the sum of 500,000 francs.

Verona, too, has in view the construction of a hospital-sanatorium, the funds for which have been supplied by the Local Savings Bank, the Corporation, and private liberality.

Catania has a lazaretto for consumptives with eighteen beds.

At Rovigo, the building for consumptive patients near the public hospital, which the city owes to the munificence of Signor Gino Giolo, barrister-at-law, is already constructed and is only awaiting its fittings and furniture. It is divided into two wards, one for men and the other for women, each containing one room with six beds, another room with four, and a third with one, besides a terrace for the invalids under cure.

At Florence, the consumptives occupy three buildings apart, two for men and one for women, and each containing twenty-nine beds, in the hospital of Boniface. The two wards for men have never been full; but the ward for women has, and, when this happens, the patients for whom no vacant bed can be found are temporarily housed in a room to themselves in the hospital of S. Maria Nuova.

At Milan, the Junta has proposed a scheme which has been approved by the City Council, for the erection of an isolating hospital for consumptive patients. This new hospital is to be built at Villa Pizzone just outside the city, so that it will immediately adjoin the other hospital that it is intended to erect for chronic cases.

There is besides at Milan, near the Ciceri Hospital, a small infirmary of the sanatorium type with sixteen beds, divided among four rooms, with large openings towards a garden and a portico for the open-air cure in the garden itself. For this infirmary the City is indebted to the liberality of Signora Savina Alfieri Nasoni.

From these brief notes, many of which are drawn from an excellent book, by Dr. F. Galli, and published by Hoepli, "La lotta sociale antitubercolare in Italia," it must be clear that, all things considered, we are by no means standing idle while in other countries the soldiers

of sanitary science are battling with every improved weapon of most modern invention against this insidious foe.

What Rome, on her own account, has done to combat this terrible scourge we shall best be enabled to judge when in April next, 1912, the International Congress against Tuberculosis meets and the Exhibition of Hygiene and Hygienic Work will be opened.

So far as institutions specially devised to combat tuberculosis are concerned, there is up to now only one at Rome, the King Humbert I. Hospital Sanatorium with the dispensary attached to it; but others are in process of formation, such as the "Janiculum" dispensary. These, modelled on the system that has been found to work so exceedingly well in other countries, and in some cities of Italy, are at the moment when we write these lines being brought into working order by the Organizing Committee of the coming Hygienic Exhibition, by the City Commission for the relief of chronic invalids, and by the Land Institute: and they are intended not only to deal with the disease when once established, but to do useful work in its prophylaxis and in general hygienic reform.

But, besides the above, there have long been in Rome many charitable institutions which, though they have other primary objects and special aims, may be regarded as indirect means of combating the tuberculosis scourge; and the value of their work from this aspect can hardly be over-rated, as they are always on the alert, and ever active in warding off those unhealthy conditions that invite the disease. Such, for instance, are the Pious Foundations for the provision of seaside and other climatic sanatoria, the homes by the sea and in the Apennines for children, and also for adults; the asylums for nursing mothers with children at the breast; the Friendly Institutes for such mothers and children; the Pro-Infanzia Institutes—those which have taken for their sphere of work kitchens for the poor, workmen's buildings, and the hygiene of the house; ambulatories and dispensaries for children and for adults; the sanitary inspection of schools: open-air schools; the Association for the Promotion of Physical Education, and many other similar institutions. All of these are of great value to persons of every age, but especially to children and young people, affording most efficacious means for the strengthening of constitutions and furthering resistance to morbid influences. But all these noble and most useful institutions have up to now gone each its own way in perfect independence, without any wise co-ordination which might enable them to direct their energies specially towards one main end—viz., the quelling of the most terrible scourge of all, tuberculosis, that mows down so many victims in our midst. And it is precisely this co-ordination, this welding together into one compact whole of so many scattered forces to battle more effectively with this devouring malady, that has at last

been brought into being here in Rome by many illustrious workers. On their initiative, there met together, towards the close of last year, representatives of all the charitable institutions of Rome, both sanitary and other. The idea was taken up most enthusiastically by all present, and steps are being taken to secure the alliance of all institutions in the battle against tuberculosis. This Alliance, which leaves the institution the most perfect independence in working out its own special ends, has for its object the promotion and co-ordination of every form of charitable activity which aims at the prophylaxis and cure of tuberculosis, especially tuberculosis in young children. Various meetings were held, and at these the articles were drawn up which form the basis of the action of the new Alliance, and also the rules for their due application. The Organizing Committee was constituted as follows: Honorary President, Professor Guido Baccelli; President-in-Ordinary, Professor Augusto Tamburini; Vice-President, Dr. Quirico (Commendatore); Treasurer, the Countess Giulia Sanseverino; Secretary, Professor Grilli; together with the Marchioness Picardi, the Marchioness of Roccagiovane, Professor Caruso (Commendatore), Count Cencelli (Senator of the Realm), and Signor Lucifero (member of the Chamber of Deputies). The Alliance has already begun its work, stimulating the various institutions to combined action in aid of the sufferers from tuberculosis, their families, and all who have a predisposition to the disease, and especially to the notification of all such cases to the Alliance itself and to the sister institutions, that each may give the sufferers the help its special sphere of activity peculiarly qualifies it to bestow. The Alliance proposes, further, to establish hospices at the seaside and on the hills for young people who have a predisposition to tuberculosis or who are only in the very earliest stages of the disease, but who are too old to be admitted into the hospice and sanatorium at Anzio. But in order that this beneficent institution may work with vigour and efficacy, it must have the support of the central and local authorities of our land and of all public bodies and private associations whose scope is charitable work in the sanitary field, so that our new Alliance may obtain the financial resources without which it is helpless, and that its action may be a reality, effectively prompt, and continuous in the relief of so much misery. The Savings Bank Department, the Commission of the Fund for Charity and Public Worship, the Roman Section of the National League against Tuberculosis, the City Council of Rome, and the Congregation of Charity, have already granted or assigned subsidies to the Alliance. But we trust that private benevolence too, recognizing how much is at stake here to the race, will be large in donations to our philanthropic and beneficent work; so that when philanthropists and scientists assemble at Rome from every quarter of the globe, to celebrate our universal league against the

tuberculosis scourge, we may be able to marshal in the foremost line, among the Roman institutions pledged to do battle in that holiest of crusades, this noble new institution of ours. And, the success of our Alliance once assured, it will need only a rational co-ordination of our forces and a wise initiative to prove to all the world, in the clearest and most eloquent way, how much has been done and is now doing in Rome, not only to promote charitable work and public health in general, but also specially, and with, if possible, even more ardent enthusiasm, to bar the advance of the terrible foe that, more than any other malady, works such awful havoc among our youngest and loveliest, and is such a potent factor in the most deadly forces that make ever so mightily for the degeneration of the race. And it is most just that this mission should be confided to Rome—Rome, the living symbol of the most glorious traditions, the highest civilization, of our Italian stock; the mission, we would say, of proclaiming to the world that our country forgets not that first among the nations she placed the sources of health within the reach of the poorest of her sons at need, and that she is the motherland of Ramazzini.

APICAL PERCUSSION IN THE DIAGNOSIS OF EARLY PULMONARY TUBERCULOSIS.

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I COMMENCED percussion of the extreme apices of the lungs on the advice of the late Professor Trevelyan, of the University of Leeds, who suggested I should investigate the methods employed by Krönig and others with the object of proving their value or otherwise in the diagnosis of early pulmonary tuberculosis. My results have been confirmed by the Honorary Physicians to the Leeds Sanatorium for Consumptives, the late Dr. Trevelyan, Dr. Woodcock, and Dr. Watson. After examination of 250 cases of suspected pulmonary tuberculosis, I have come to the conclusion that the value of apical percussion in the diagnosis of early pulmonary tuberculosis is extraordinarily great. I have frequently been able to demonstrate the presence of a tuberculous lesion at one apex of the lung when the other physical signs have been doubtful. In one of the cases, tubercle bacilli were found in the sputum, but the site could not be ascertained except by apical percussion, and a few weeks later râles appeared at the site thus indicated. In many cases of doubtful diagnosis the method has been of very great

value. An example is shown by the following case: A girl was examined at the central offices, and the only sign that could be found was a limitation of the resonant zone above the left clavicle. She was admitted to the Sanatorium for observation. I tested her with the subcutaneous tuberculin test, and there was a reaction to 1 milligramme of Koch's old tuberculin. The focal reaction—râles at the left apex—proved that apical percussion had indicated the correct site of the lesion. The methods I investigated were: (1) Krönig's; (2) Philip's; (3) tidal percussion.

The descriptions I have read of performing Krönig's method have appeared to me to be very vague and difficult to follow. After carefully examining 250 cases, I have been able to employ a more accurate way of mapping out the resonant area. By this method I have been

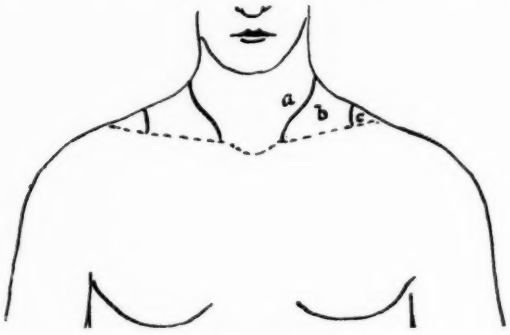


DIAGRAM I.

able to demonstrate the presence of the lesion in 80 per cent. of the early cases, and in 92 per cent. of the later ones. By Philip's method, the lesion was indicated in 50 per cent. of the cases. When examining my patients, I now map out the resonant area, and, if there is no difference in the breadth of the zone on the two sides, I employ Philip's method. I rarely find it necessary to use tidal percussion, although this might be of great value.

History.—A. Fränkel traced this method back to Seitz and Ziemssen, in 1883. Krönig commenced percussion of the apices in 1889, republished his method in 1902, and in 1907 provided us with a monograph. Oestreich tested the method experimentally on post-mortem material, and obtained extremely satisfactory results. He was able to determine the presence of tubercular centres the size of a cherry provided they were not too far removed from the surface.

Krönig's Method.—From the point of view of this method, the anatomical margins of the apex must not be considered. In a normal

apex there is a broad band of resonance above the clavicle, projecting over the shoulder-girdle; at the point where it passes over the shoulder-girdle it is called the isthmus. I have found the average breadth of the projected band of resonance immediately above the clavicle in an adult to be $2\frac{1}{2}$ inches, and at the isthmus $1\frac{3}{4}$ to 2 inches.

The following method of percussing the projected resonant area has given me the best results. I stand behind the patient, who is sitting on a chair facing the window with the shoulders fully exposed, and place the forefinger of the left hand accurately in contact with the skin well up at the inner side of the neck, at an angle of 45° to the middle line of the neck, the tip of the finger pointing downwards, and the centre of the finger 2 to $2\frac{1}{2}$ inches from the lower part of the thyroid cartilage. I percuss slowly downwards and outwards, at right angles,

DIAGRAM II.

to a line joining the lower part of the thyroid cartilage with the junction of the outer and middle thirds of the clavicle. As soon as pulmonary resonance is reached, I mark this spot with a skin pencil. I now commence percussion at the inner side of the neck immediately above the inner end of the clavicle, and percuss outwards until pulmonary resonance is reached. I mark this spot also with a skin pencil. The upper and lower ends of the inner boundary have now been found. By joining these pencil marks, the inner boundary is obtained. The line should be slightly concave inwards above and slightly convex inwards below. It can be mapped out with slightly greater accuracy by percussing outwards and downwards at different levels, commencing in the triangular area of the neck between an imaginary line drawn between the upper and lower ends of the inner boundary and the middle line of the neck. The points at which pulmonary resonance is reached are marked with a skin pencil, and the whole of the marks joined together. The outer boundary of the resonant area is defined

by percussing inwards from the shoulder until pulmonary resonance is reached. The outer boundary is concave outwards, and ends at the junction of the outer and middle thirds of the clavicle. The method will be much better understood by reference to the diagrams. Klebs describes a posterior band of resonance, but this is not so easily defined owing to the thickness of the muscular layer. The normal level of the apex behind is that of the first dorsal spine, and it is 2 to 2·4 inches from the spine. The inner boundary slopes with its convexity towards the spinal column until it reaches the level of the second dorsal spine, when it runs downwards, parallel with and half an inch from the spine. The posterior and external line is found to run downwards with its concavity outwards, and to terminate with great regularity at the middle of the spine of the scapula. In a normal

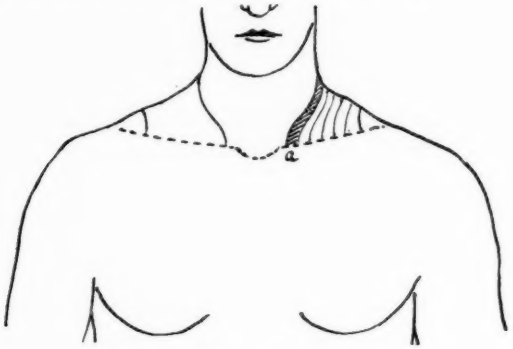


DIAGRAM III., CLASS I.

chest I have found the projected zone of the lung resonance to be equal in breadth on both sides. On an average, the breadth is $2\frac{1}{2}$ inches on both sides immediately above the clavicle, and $1\frac{3}{4}$ to 2 inches at the isthmus. In Diagram I. (*a*) indicates the position of the dull note at the inner side of the neck; (*b*) the area of lung resonance; and (*c*) the note at the outer side of the neck.

Owing to the great difficulty in accurately describing the changes I have observed, I have represented them diagrammatically as follows:

The projected zone of lung resonance is divided by longitudinal lines into six belts. The inner and outer belts named A and A^1, the two middle belts C and C^1, and the intermediate ones between A, and C, and A^1, and C^1, B, and B^1.

In a normal chest the percussion note over the six belts is resonant.

In Class I. there is an impaired note ove. the inner belt, A, indicating commencing infiltration of the apex.

In Class II. the note over the inner and outer belts A and A^1 is impaired, probably indicating more infiltration than in Class I.

In Class III. the note over the inner and outer belts A and A^1 is dull (whereas in Class II. it is impaired), the middle belts are resonant, and the intermediate belts B and B^1 are impaired. This class probably indicates strong retraction.

In Class IV. there is an impaired note over the whole of the projected zone; this needs no diagrammatic description.

The earliest change I have observed has been an impairment of note within the inner boundary of the resonant zone, thereby causing a contraction of the zone from the inner side. This is indicated by shading representing an impaired note over A, Class I.

A gland behind the sterno-mastoid may give rise to an impaired

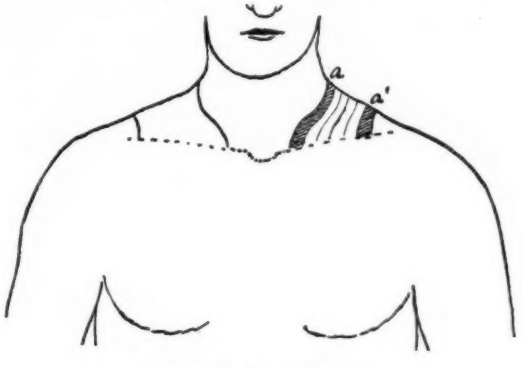


DIAGRAM IV., CLASS II.

percussion note within the inner boundary, thus simulating apical disease.

The next percussion change I have observed has been an impairment of note within the inner and outer boundaries of the normal resonant zone, thereby causing a contraction from the outer and inner margins, reducing the breadth of resonance from $2\frac{1}{2}$ inches above the clavicle to about $1\frac{3}{4}$ inches or less. The impaired note within the boundaries is indicated by shading in the illustration. I have called this change Class II.

The third change—the zone of lung resonance has been greatly contracted. In Class II. the note over the outer and inner belts was impaired, whereas in Class III. the note was dull over these belts, and impaired over the adjacent belts B and B^1, leaving only a very small area of lung resonance.

By reference to the diagrammatic description, the change will be much better understood.

The fourth change, an impaired note over the whole of the normal resonant area, all pulmonary resonance had disappeared (Class IV.). This change was only present in a few of the late cases.

Resistance to the finger is frequently of more value than the contraction of the resonant zone. The resistance can often be made out when no difference in note can be detected. It is of the utmost importance to use very light percussion, so that the percussion note can only be heard by the physician's ear. I have found this percussion change in certain other pathological conditions affecting the apex of the lung : (*a*) Non-tuberculous collapse of the apex ; (*b*) malignant disease of the apex ; (*c*) apical pneumonia.

In early cases of pulmonary tuberculosis, the apical change frequently disappears as the patient's condition improves.

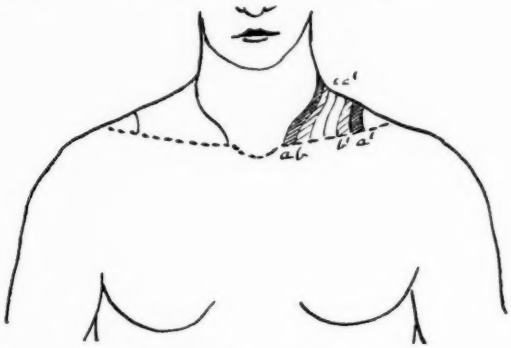


DIAGRAM V., CLASS III.

Philip's Method.—I have examined 150 cases by this method ; the lesion was indicated in 50 per cent. of the cases. The normal apex extends 1½ to 2 inches above the clavicle. In a healthy adult the percussion note should extend a like distance, which is equal to three fingers'-breadth above the clavicle. Philip recommends percussion parallel to the clavicle. As in Krönig's method, very light percussion is necessary. Percuss one finger's-breadth immediately above the clavicle, and compare the note with that on the opposite side. Compare the note of the second finger's-breadth above the clavicle with that on the opposite side. Compare the note over third finger's-breadth above the clavicle with that on the opposite side. In a normal chest, the three fingers'-breadth on each side should be resonant. The first change I have observed has been an impairment of the note over the third finger's-breadth on the affected side. The second change, an impaired note over the second finger's-breadth, dull note over the third. The third change, first finger's-breadth, impaired ; second, dull ; third, dull.

Philip's Tidal Percussion.—In a healthy subject, the difference in the height of the percussion note during inspiration and expiration is one finger's-breadth; this should be equal on both sides. In early pulmonary tuberculosis, limitation of the tidal difference may be noted, and as consolidation advances the limitation of the tidal change becomes more marked.

In cases of doubtful diagnosis, tidal percussion may be of great value. I have been able to detect two changes: (*a*) Half a finger's-breadth difference between inspiration and expiration; and (*b*) no difference between inspiration and expiration.

Lastly, *hyper-resonance* above the clavicle may indicate the site of the lesion. The late Dr. Trevelyan demonstrated this sign to me on one of his cases. In estimating this sign, one has to remember that the note above the right clavicle is normally more resonant than the note above the left clavicle.

The following table comparing the signs on apical percussion with the other physical signs demonstrates its great value. I wish to thank my honorary physicians, Dr. Woodcock and Dr. Watson, for their kindness in allowing me to publish these results. The diagrams have been drawn by Dr. Watson.

TABLE SHOWING THE RELATION BETWEEN THE SIGNS OF APICAL PERCUSSION AND THE PHYSICAL SIGNS.

Apical Percussion (Krönig's).	Physical Signs.	Tubercle Bacilli.	Tuberculin Test.
Class II. Right apex	Impaired note and râles, right apex.	Present.	v. Pirquet's test, positive.
Class II. Left apex	Râles, left apex, anterior and posterior.	None found.	v. Pirquet's test, positive.
Class II. Left apex	Râles, left apex.	None found.	v. Pirquet's test, positive.
Class II. Right apex	Impaired note and râles, etc., right apex.	Present.	v. Pirquet's test, positive.
Class III. Left apex	Impaired note and râles, left apex.	Present.	v. Pirquet's test, positive.
Class II. Left apex	No definite signs.	None found.	There was a general reaction to 1 milligramme of tuberculin, and a focal reaction; râles at the left apex. In this case apical percussion pointed out the site of the lesion, and this was confirmed by the tuberculin test.
Class II. Left apex	Impaired note below the left clavicle.	None found.	v. Pirquet's test, positive.

NATIONAL INSURANCE AND THE MUNICIPAL CONTROL OF TUBERCULOSIS.

By A. MEARNS FRASER,
M.D., D.P.H.,
Medical Officer of Health for the Borough of Portsmouth.

In May of last year Mr. Lloyd George, in introducing the National Insurance Bill, estimated that there were from four to five hundred thousand persons suffering from pulmonary tuberculosis in this country, and he proposed to set aside £1,500,000 for the provision of institutions to deal with these, and an annual sum of £1,000,000 for maintenance. The Bill having now become an Act, the above amounts will shortly be available for use—that is to say, it will now become possible to finance a concerted national effort for the control of tuberculosis in this country, and surely no problem at the present moment is more worth careful consideration.

Under these circumstances I offer no apology for submitting a scheme, complete in itself, which I am convinced is capable of securing very successful results—one, moreover, that, not being dependent on the provision of extensive buildings, is sufficiently moderate in cost to enable it to be applied to the whole country. Here I venture the opinion that it is essential for the success of any systematized campaign against consumption that all the measures in one district should be co-ordinated, directed and controlled by one head, otherwise there must be overlapping and waste of energy. Further, this head should be the medical officer of health, who has behind him the weight and prestige of the legally constituted sanitary authority, and who from his position is able to effectively combine voluntary and municipal effort. Independent voluntary associations can never act so effectively, because they neither carry the same weight nor can they have the same knowledge of the various conditions relating to and influencing the prevalence of the disease in the district. This applies with even more force since the issue by the Local Government Board of the recent Public Health (Tuberculosis) Regulations, 1911, which provide that every case of pulmonary tuberculosis that comes under the notice of a medical practitioner shall forthwith be notified to the medical officer of health; and as these notifications are of a confidential nature, they cannot be passed on to any other person or association.

The Plan of Campaign.

The scheme of which I am about to give a short account is entirely under the control of the local Health Department. It is based upon the

treatment of patients by means of tuberculin at a central dispensary, and associated with this are various other measures that have proved to be of value in the cure and prevention of consumption. The scheme embraces—(1) A municipal tuberculin dispensary with medical officers and nurses; (2) fully trained nurse health visitors; (3) an organized voluntary care committee; (4) a hospital; (5) open-air shelters; (6) issuing printed leaflets and giving public lectures; (7) the bacteriological examination of sputum for medical practitioners; (8) the issue of pocket sputum-flasks and spitting-cups; (9) the disinfection of rooms and clothes; (10) the removal of insanitary conditions in homes and workshops; (11) a policy of steady general improvement of the housing conditions of the working classes.

The majority of the above measures are common to most well-organized health departments; it is the municipal tuberculin dispensary which is a new departure, and which, as it is the outstanding feature and centre of our system, calls for more detailed description.

The Municipal Tuberculin Dispensary.

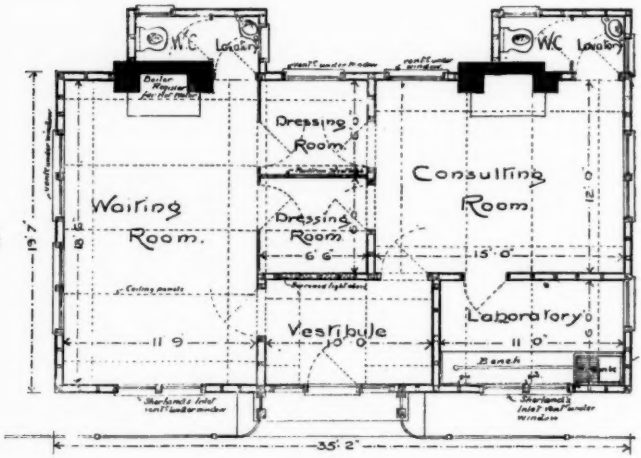
The Portsmouth Municipal Tuberculin Dispensary was opened in June last. Dr. Hilda Clark, late of the Street Tuberculin Dispensary, was appointed Medical Officer, and subsequently, owing to the large number of applicants for treatment, a second Medical Officer, Dr. J. Fairley, late of the Queen Alexandra Sanatorium, Davos Platz, was appointed towards the end of last December.

The principal reasons influencing the Town Council to establish a tuberculin dispensary in preference to a sanatorium were the following: (1) The results obtained from tuberculin treatment apparently held out greater hopes of success than those from sanatorium treatment, the latter having proved particularly unsatisfactory in dealing with consumptive patients from the working classes; (2) the expense of sanatorium treatment on such a scale as to deal with all the consumptives in the borough was prohibitive; (3) the dispensary system promised to have the important result that patients would present themselves for treatment before the disease had advanced too far for permanent benefit to be effected; (4) last, but by no means least, treatment in a large number of cases could be carried out whilst the patients continued at work, and so remained self-supporting.

The dispensary building consists of a small one-storied structure, the general arrangement of which can be seen in the accompanying plan and sketch-plan. It comprises consulting, waiting, and dressing rooms, etc., with a small laboratory attached. It is composed of a material known as "eternite," and cost £330 complete, with electric-light, gas, and water fittings. It is, of course, the centre for the administration of the tuberculin treatment. I do not propose here to

enter into a description of the details of tuberculin treatment, but inasmuch as the expression "tuberculin treatment" is applied haphazard to the employment of a large variety of tuberculins of different strengths and different therapeutic qualities, and to every method of dosage ranging from $\frac{1}{10000}$ milligramme to 1 c.c., it is necessary to make it clear that the method of administration here referred to is the modern intensive one as practised at the Kennington Dispensary. It depends on an initial course of the less toxic bovine tuberculin, starting with a dose of about 0·0005 c.c. followed, by a course of old tuberculin (human) up to a final dose of about 1 c.c.

Portsmouth Municipal Tuberculin Dispensary.



PLAN

The dispensary is open every day of the week, and late on two evenings, to suit those whose work will not allow them attending at any other time. Each patient has a fixed time to come, by which means a crowd of consumptives in the waiting-room is avoided and waste of the patients' time is prevented, an important consideration seeing that so many are at work. At his first visit the patient is given a thermometer, taught by the nurse how to take and record his temperature four-hourly on a printed card, and told to return in a week's time. During this period a trained nurse visits him in his home, to see that he understands taking his temperature correctly, and to advise him on various matters affecting his own well-being and that of others in the

same house. When he appears again he is thoroughly examined, and if tubercle bacilli have not been found in his sputum, or if the diagnosis is not certain, a "test dose" of tuberculin is administered subcutaneously. Provided the diagnosis is positive and there is no contra-indication to treatment, such as a high temperature, tuberculin treatment is commenced. Patients who are too ill to attend for treatment at the dispensary, or who are running a high temperature, are kept at home for a period, provided this is suitable, or are admitted into the municipal hospital, where it is usually found that four or five weeks is sufficient to bring them to a condition when they are fit to continue treatment at the dispensary. The average length of a course of treatment is about six months.

The Care Committee.

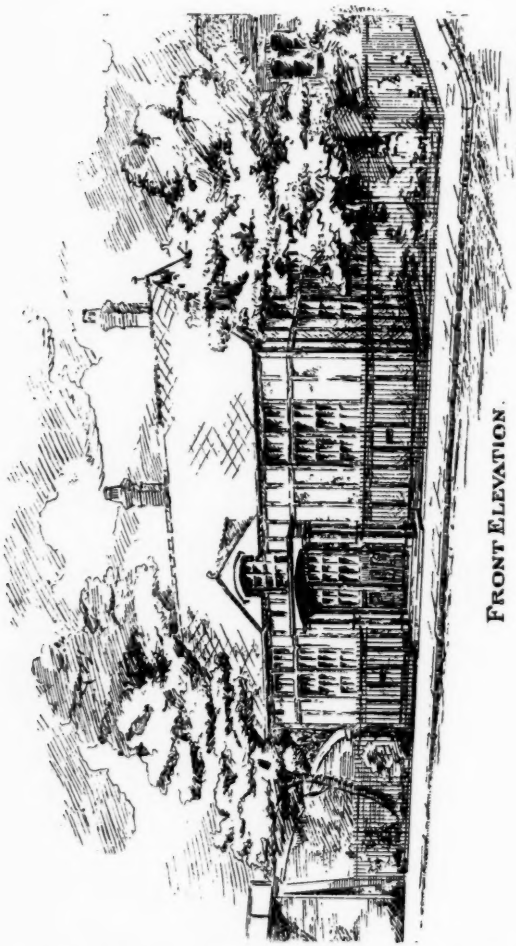
Patients who, although well enough to attend the dispensary for treatment, are yet in need of food, clothes, or other assistance in order to enable them to derive full benefit from treatment, are referred to what is known as the "Care Committee." This is a very important auxiliary association in connection with the dispensary. The Mayor of Portsmouth is the President, the Medical Officer of Health Chairman, and it is composed of representatives from the Sub-Health (Dispensary) Committee of the Town Council, the Board of Guardians, and from all the charitable and social-work organizations in the borough. It meets fortnightly at the dispensary, when the Medical Officer announces the names of those patients who are necessitous, indicating the special requirement in each case. As all the charities in the town are linked up to the Care Committee, there is seldom any difficulty in getting one or other, through its representative on the Committee, to undertake to secure what is necessary. This Care Committee has proved extremely valuable, and up to the present there has been no patient referred to it for whom its members have not been able to obtain the particular assistance indicated as necessary by the Medical Officer. The treatment of many patients, indeed, could not have been successfully undertaken without the assistance of this voluntary association.

Results of Treatment.

To talk of results when the dispensary has been in operation for less than a year is to invite the criticism that no results regarding the treatment of consumption can be accepted which have not been subjected to the only test of any value—namely, that of time. As, however, since the opening of the dispensary, I have received so many inquiries as to the work, it may prove of interest to mention some of the results we have so far secured; in respect to these I freely acknow-

ledge that they lack the test of time, by which, indeed, they cannot be fully judged until three or four years shall have elapsed.

In the first place it has been extremely gratifying to find that so many of our patients have been steadily improving under treatment



whilst still following their ordinary occupation. Besides those engaged in house-work, thirty-five engaged in work outside their homes have continued at work right throughout their treatment. In addition, out of forty-eight who were unable to work on applying at the dispensary, nineteen have since been enabled, as a result of treatment, to return to

work, three are working part time, and four more are fit for work, but have not yet secured a suitable job.

A misconception seems to have arisen in some minds as to the class of patients who are treated at tuberculin dispensaries. I have seen it stated that the results secured at such institutions are unreliable, because the bulk of the patients are those in the very earliest stages of disease, or those in whom the diagnosis depends solely on the reaction afforded by a test dose of tuberculin. Anyone attending the Portsmouth Dispensary would soon be disabused of this idea. The success of any form of treatment, other things being equal, depends on securing the patient in as early a stage of the disease as possible, and it is above all this class of patient that, by means of visiting the homes and carefully examining "contacts," we hope in time to secure; but as soon as the dispensary was opened, patients in all stages of the disease applied, and as our guiding principle has been to refuse treatment to no patient on whom there was the least chance of conferring material benefit, it has meant, owing to the large number of applications, postponing the treatment of very early, doubtful, or contact cases, in order to attend, before it became too late, those with marked physical signs. More showy statistical results could, of course, have been obtained by a careful selection of patients. This, however, has not been our aim, and we have endeavoured solely to effect the best material results. We have amongst our patients several who have been refused or discharged from sanatoria as unsuitable for treatment owing to the advanced stage of the disease.

Speaking generally, the results we have obtained so far at the dispensary could not be expected to be more encouraging, and they strongly indicate that this institution is going to play a successful part in controlling the consumption scourge. Statistics dealing with the treatment of consumption depend upon the consideration of so many factors that one has come to attach very little weight to many of them. I may say, however, that out of 184 patients (who have had more than a month's treatment by the end of December), 84 are steadily improving and 31 have been discharged free from all symptoms, as "disease arrested." Of these patients, 36 only were in the first stage (Turban), 47 were in the intermediate stage, and 102 were advanced or complicated cases; about 70 per cent. of the patients were sent to the dispensary by their own medical attendants. I would advise those interested in the subject not to rely entirely on statistics, but to take an opportunity of visiting a tuberculin dispensary and examining the patients for themselves; few who do so will fail to be struck with the remarkable results that are apparently being secured. One of the most constant signs of improvement is the increasing weight of the patients: 94 have shown this to a marked extent; of these, 24 were in the first stage, 20 in the second stage, and 50 in the advanced stage, the

greatest gains in the three classes being respectively 11, 20, and 23 pounds. Still more striking are the opinions expressed by the patients themselves as to their health; it is quite common to hear them say: "I have not felt so well for years." That this improvement is not imaginary, or due simply to their taking a more hopeful view because they feel that something is being done for them, is shown not only by the evidence of physical signs, but also by the practical test that they are doing far more work than they had been able to do before, and are doing it without rise of temperature or becoming physically exhausted.

Conclusions.

Much more might be written on the subject of the tuberculin dispensary system; but all I desire at the present stage is to attract the interest of the responsible advisers to sanitary authorities to a scheme for which, to say no more, reasonable grounds exist for assuming that it may go far to solve the consumption problem. It is, moreover, a scheme which is moderate in cost,[1] and with the help of the money which will be available under the National Insurance Act is well within the means of sanitary authorities. I wish to emphasize the point that the tuberculin dispensary, although it is the principal factor in the scheme, is not in itself sufficient, and does not do away with the necessity for a sanatorium or hospital, nor for the adoption of other auxiliary measures. The sanatorium accommodation necessary, however, will not be a tenth of what would otherwise be required, as accommodation will not, as is the present practice, be required for early cases, but only for the cases which are too far advanced to be treated at the dispensary, for those with complications, and for patients whose home conditions are for some reason or other unsatisfactory.

Lastly, it must be insisted that no scheme can be judged to be complete that does not include and co-ordinate in the district all available means for attending to the needs of the individual, and for improving generally the conditions under which the inhabitants, and especially the working classes, live.

[1] The cost of administration of the Portsmouth Dispensary alone, based on the actual expenditure during the eight months from June 7, 1911, to January 31, 1912, is roughly £1,000 per annum. This amount, which takes no account of the initial outlay of £400 for building, furniture, fittings, etc., is made up as follows:

	£	s.	d.
Salary of Medical Officer	300	0	0
Salary of Assistant Medical Officer	250	0	0
Salary of two Nurses (£80 to £100)	160	0	0
Drugs and apparatus	180	0	0
Printing and stationery	33	0	0
Telephone	5	5	0
Wages of cleaner	39	0	0
Miscellaneous (uniform, gas, water, etc.)	32	15	0
	£1,000	0	0

NATIONAL INSURANCE AND THE HOME TREATMENT OF CONSUMPTIVES.

By SIDNEY DAVIES,
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AND
MARION FITZGERALD,
Sanitary Inspector, Woolwich.

Many cases of consumption can be satisfactorily treated at home, and more must make the best of what resources they can find there. Children often do quite well at home, and especially so if they can attend an open-air school. Short educational sanatorium treatment has been found of little value for those too young to be able to modify their own environment on returning home, and charitable resources are inadequate to provide one or two years' residence for more than a moiety of those requiring it. Mothers, again, are commonly unable or unwilling to leave their children as long as they can look after them, and consequently often refuse the offer of a sanatorium.

For all advanced cases it is usually a choice between home treatment and the infirmary. Homes for the dying are few. When the patient is a man, his illness probably means loss of income, and among the poorest class removal to the infirmary can only be temporarily delayed. If, on the other hand, the wife or other dependent is ill, the guardians are not obliged to admit her as long as the husband is in work, and often refuse to do so, however desirable it may be from a sanitary point of view to remove her from the children, and save them from infection. Thus there are a large number of cases for whom there is no alternative to home treatment. How can this be best carried out?

General Principles.

In order for any success to be expected the following requisites are essential: (1) A sufficient income; (2) fair intelligence on the part of the patient and the housewife; (3) a house in sanitary condition and healthily situated; (4) a medical attendant who knows his work; (5) a proper diet; (6) open-air treatment.

A sufficient income usually implies that the father or husband is at work, and has at the least 30s. a week coming in when there is a small family, and 35s. or 40s. a week when there is a large one. With less than this the diet will be deficient, the rooms too few and small, and comforts lacking.

Intelligence is, perhaps, more important than income. The patient, if an adult, must be taken into the confidence of the doctor. It is extraordinary that any physician can profess to treat a case of phthisis without informing the adult patient and friends. Intelligent co-operation of these will make all the difference between success and failure. They must know what the doctor aims at, and by what steps he hopes to reach that end.

The *house* must be dry, not shut in, have good-sized windows, which can be freely opened, and a moderate yard or garden attached. Such limited sanitary requirements are practically always available for those who come within the wage limit stated. An elevated site on dry soil is, of course, preferable, but an open site on low but dry ground does very well. A room should be chosen which gets the most sunshine, or at any rate the most light. A southern or western aspect is the best. A large room is desirable; but a small room with a large window, occupied solely by the patient, is better than a large one shared with other members of the family.

Medical Attendant.—Prima facie it might be supposed that every qualified practitioner could be trusted to carry out the treatment of a common disease like phthisis. Experience shows, however, that the majority of general practitioners seldom undertake the thorough management of consumptive cases. The great majority of patients consult specialists at hospital or elsewhere, and the general practitioner —even if he has the ability and desire to deal thoroughly with the case —feels that he is only looked on as a *pis aller*, or temporary resource. The doctor must be interested in open-air treatment, and able to command the confidence of the patient, and must feel reasonable surety of not being dismissed after a short period. This will not often be the case when the income is below £2 a week, unless the patient belongs to a club or provident dispensary, and in such cases the patient too often distrusts the doctor's willingness to take prolonged pains which are not proportionally paid for. The doctor, therefore, must be one who shows by his bearing that he is interested in the patient apart from the fees. The National Insurance Act may, by financing tuberculosis dispensaries, help to solve this difficulty. Under the Act municipal authorities might receive grants for the establishment and maintenance of such dispensaries.

Dietetic Considerations.

The task of securing to the consumptive at home the "generous but not excessive diet" which he needs is beset with difficulties, if the patient be of the working class. The well-to-do consumptive can follow out at home the dietary that he had in the sanatorium without

any trouble. The poor man must do the best he can with the means at his disposal. What is the best advice to give him in his circumstances is our present object of inquiry.

Drs. Bardswell and Chapman, in their most interesting and useful manual, "Diets in Tuberculosis," work out at length dietaries suitable for consumptives. These are based on experiments designed to secure efficiency at a minimum cost carried out at various sanatoria. For details the reader is referred to the book itself, where the dietaries are not only calculated according to caloric value and percentage of proteid, but are set out fully, showing the actual amount of each article of food-stuff taken. For this reason the book should be read by all who are engaged in the domiciliary visiting of consumptives. Put briefly, the main principle is that the physiological diet—*i.e.*, the one sufficient to maintain that particular individual in health—must be increased 30 per cent. as regards the amount of proteid in the case of consumption. Expressed in money value, the average cost of such a diet worked out at about 11d. per head per day in the investigations. Allowing for the rise in food prices in the seven or eight years which have elapsed since the inquiry, it would be fairer now to put the cost per head at 1s.

Supposing that a member of a working-class family is being treated at home for consumption, is it possible to give him or her a diet costing 7s. a week? Obviously, if the family be of a normal size—*i.e.*, father and mother, and, say, three or four children—and the wages anything between 30s. and 35s., it will strain the family resources considerably. Moreover, if the father himself be the patient, the family income will probably be reduced owing to absence from work, or he may have to take a lighter job at a lower wage. Amongst the poorest labouring classes the difficulties are even greater, and it is impossible to meet a consumptive's nutritional needs from the family resources. No measures for the treatment of patients below the "poverty line" can be adequate unless accompanied by additional nourishment. Dr. Niven considers that sanitary authorities should be empowered to vote sums of money for this purpose; and he estimates the sum needed by Manchester at £5,000 per annum.[1]

Where, however, the family income is not so straightened, it is possible by thought and ingenuity to do something, provided one can secure the intelligent co-operation of the housewife, and overcome the prejudices and conservatism of the working-class woman in regard to food.

If it is essential to increase the amount of proteid sufficient in normal health by 30 per cent. in the case of consumption, the diet will be very costly if large amounts of meat are given. To be cheap, proteid must be obtained to some extent from vegetable sources. From the investi-

[1] Transactions of the National Conference for the Prevention of Destitution. 1911.

gations of Drs. Bardswell and Chapman, one finds that patients as a rule take a diet in which part of the nitrogen is obtained from the pulses and part from meat very well indeed. Further investigations with meat-free diets showed that these were taken fairly satisfactorily by the robuster patients—*i.e.*, those whose digestions were not impaired. It must be remembered that these investigations were conducted in sanatoria, where the food was carefully selected under medical supervision and skilfully cooked. Moreover, the nature of the experiment was explained to the patients, and they became personally interested in what was to them an unusual diet. This element of interest would probably play no small part in the success of the experiment. Unfortunately, the pulses are not as a rule popular with the working classes, and only a small proportion of consumptives have had the preliminary educational experience of a sanatorium diet. Moreover, the women do not as a rule know how to make peas, beans, and lentils palatable. A diet, however cheaply bought, will be economically dear if it is not palatable, because it will not be well taken. Health workers engaged in visiting cases of phthisis would do well to provide themselves with simple recipes for the cooking of pulses both with and without the addition of meat. They are rendered more palatable when used with some meat. The bulkiness of vegetable proteid is a hindrance to its use in some cases. It is not well taken by persons with poor appetites and digestions. About 40 per cent. of sanatoria patients were found to have impaired digestions. The percentage would be considerably higher outside these institutions, where there are advanced and chronic cases to deal with. In fact, many conversations held with the wives of consumptive working men have shown that, not only are cases of impaired digestion common, but that their appetites are frequently poor and fitful, and this in cases where they are able to be at work more or less regularly. One cannot offer a plate of pease pudding to a man who asserts that he can only "fancy" fish or eggs. They sometimes refuse altogether the dinner which an anxious wife has been at pains to prepare. This may be because the midday dinner hour is all too short to allow of a rest before eating, and they are probably tired and irritable. It seems best in such cases to recommend that, where possible, the principal meal should be taken when the day's work is over.

Another article of food made much use of in sanatoria, and which is largely unpopular at home, is oatmeal. Here, again, it is probably a question of preparation, for porridge to be palatable must have long cooking. And here, as in the case of pulses, the increased amount of fuel necessary to cook some of the cheaper kinds of food adds considerably to their cost. A diet which is cheap in regard to foodstuffs may be really expensive if it requires much preparation or cooking, for it

probably takes up time which would otherwise be devoted to wage-earning.

In giving advice on diet, the line of least resistance is to ascertain what foodstuffs are most commonly in use in the household, and then to indicate which should be used freely and which sparingly, and what additions should be made from the point of view of economy and nutrition. It is wiser on psychological grounds to offer the housewife suggestions for amending her dietary than to thrust a new one ready made upon her.

The following points should be noted: (1) Money spent on alcohol is money wasted, which could profitably be spent on food. (2) The cheaper kinds of cheese are just as nourishing as the more expensive forms. Cheese is a useful form of proteid where digestion is good. (3) Eggs are always a dear form of food. (4) Margarine and dripping cost half the price of butter, and are equally nourishing. (There is, unfortunately, a good deal of prejudice against margarine, but less in the case of dripping.) (5) Separated milk taken as a beverage or used in puddings with cereals is excellent. (In the latter case the fat which is lacking can be compensated for by a little grated suet or margarine.) (6) The cheaper forms of fresh fish—cod, hake, herrings, etc.—are a valuable source of proteid. (The working classes think little of fish as nourishment, though they take a good deal in dried form as a "relish" for tea.)

The suet puddings given in the test dietaries of Drs. Bardswell and Chapman were greatly appreciated by the patients, who thought a daily pudding a luxury. The recipe given in their book, however, seems deficient in fat. They recommend using one teaspoonful of dripping to three tablespoonfuls of flour. A more palatable pudding is obtained by following the proportions of $\frac{1}{4}$ pound of suet to $\frac{3}{4}$ pound of flour.

Several useful recipes for suet-puddings and cheap soups and stews, designed to give nutritive value and palatability at a minimum cost, will be found in a book called "The Pudding Lady" (price 6d., to be obtained from the St. Pancras School for Mothers), which was the outcome of an experiment in teaching simple cookery in poor homes.

Open-Air Treatment.

Open-air treatment is obtained by three principal means—the window, walking and sitting in the open air, or a garden shelter. As stated above, a large window which can be freely opened is essential. There must be no blinds or curtains, which impede the entrance of air. For privacy there should be a short muslin curtain fixed to the lower sash, or, if a casement or French window, across the lower half. If the patient is confined to bed in the daytime, the bed should be moved

right up to the window in dry weather. At night-time and in wet weather it should stand a little to one side or away from the window, and preferably between the window and door. Both can be kept open in mild weather. Of course, the exact arrangements must be dealt with by the medical attendant or nurse, according to the state of the weather and the condition of the patient. If the bed is not close by the window, the best way is probably to have the window open 2 or 3 inches at the bottom and nearly wide open at the top. In some cases it may be desirable and practicable to take one or both sashes out of the frames, as when the window is small or the sashes unequal.

An apparatus has been described whereby a patient is practically shut out from the air of the room into the outer atmosphere while still lying in bed, and protected from rain all but the face. It consists of a sort of inverted awning, waterproof, reflected over the bed.

The doctor will prescribe exactly the amount of exercise the patient should take daily. Most consumptives, told in a casual way to get out as much as possible, take long walks in excess of their strength. The evening temperature will, of course, be watched, and the sufficiency of the exercise judged accordingly. Short walks, with long periods of sitting down in open spaces or gardens, are the best things to prescribe when there is doubt. But the most effective way of applying open-air treatment to consumptives at home is by means of garden shelters.

The majority of working-men's houses have a yard or garden sufficiently large to receive a shelter. In some cases where there is no other open space a flat root may be used. This has been successfully done in Greenwich and Woolwich. The shelter should preferably face the south-west. If the ground is not level, this can be adjusted by a few bricks. It may be necessary to sacrifice a flower-bed. However small the open space, however shut in by surrounding buildings, a person sleeping in a shelter placed therein will probably get more fresh air than he would sleeping in his bedroom, though doubtless there are often exceptions to this rule.

Many forms of shelter are in use. They all aim at allowing the patients to be flushed with fresh air while protected from rain and wind, but some forms have probably failed to realize this end. The shelters being rectangular should be able to afford protection on two adjoining sides, whichever way the wind blows, while being open on the other two sides. This is best attained by having large windows on all sides. When there is no perceptible wind, all the windows can be opened. The floor should be raised a few inches at least from the ground to insure dryness.

Dr. Lyster's open-air shelters are square or rectangular; he recommends that they should be 12 feet square, as he finds that large shelters are more comfortable and warmer than small ones. They

consist of a framework of wood on which is stretched a strong canvas. The windows, two on each side, can be closed by blinds, also of canvas, which are raised and lowered by an ingenious arrangement of strings. These large shelters give room for two or three single beds, and they are no doubt advantageous where there are large gardens. They are made by Messrs. Hill Brothers, Northwood, for £11 11s. They are not well suited for the small yards and gardens of towns. The canvas roof seems hardly to afford sufficient protection from rain and snow, but Dr. Lyster says no difficulty of this kind has been experienced.

Mr. Stanley Bates has published a small work called "Open-air at Home," in which he describes a form of shelter planned and used by him. He ascribes the prolongation of his life to living in this shelter. Mr. Bates's shelter was a rectangular structure about 9 feet by 7 feet 9 inches, the floor about 2 feet from the ground. It had a lean-to roof, a large window and door in the front, facing west or south-west, large openings on the two sides, and a narrow opening running the length of the back partition, and situated at the top. Thus the greater part of the south-west side, nearly the whole of the south-east, and smaller parts of the north-west and north-east, could be opened. The windows were fitted with wooden shutters, swinging either on a horizontal or vertical axis. The inner walls were smooth and varnished to facilitate cleansing. Mr. Bates recommends ¾-inch match-boarding for sides and doors, ⅞-inch for the roof, and 1-inch boards for the floor. The roof is covered with felt and two or three coats of coal-tar. The walls are best preserved by applying creosote to the outer surface at intervals. The cost given for this shelter is £16.

The shelter used by the Woolwich Borough Council was described and illustrated in *Public Health* for August, 1911. The floor is raised a few inches from the ground, and the shutters for closing the larger windows are made of canvas on wooden frames, as in Dr. Lyster's shelter. Wooden shutters cost less, but it was found that those over 2 feet square were heavy for patients to raise. The shutters are raised and fixed open by iron stays. In the front is a door and two windows, in the back two windows, and each side one window. The largest windows are 4 feet 3 inches by 2 feet 6 inches. The dimensions are: 7 feet by 4 feet 6 inches; height in front, 7 feet; back, 5 feet 8 inches. The shelters are made of the best materials, with payment of trade union rates of wages, for £9 10s. The size has been cut down to save expense, and also for convenience of the carriage of sectional parts through houses. But as they are mostly used only at night by persons who are following their avocations or going about by day, it is hardly necessary for them to be larger. They are provided with an opening over the front windows and door, which cannot be closed, but is protected from rain by a sloping ledge. In case in stormy weather

the occupant shuts all the windows, there would thus be always some ventilation.

A cheap and ingenious shelter is made and sold by Mr. Godfrey, of Street, Somerset, the lowest price, including a stretcher bedstead, and carriage paid, being only £4 5s. The shelter can be completely opened in front, and has a horizontal window behind about 3 feet by 6 inches, provided with a shutter. The front can be closed below by two doors, and above has a wooden awning which swings out and is supported by two wooden flaps. When this awning is out, no rain could ordinarily enter, but air is freely admitted. In fine weather the awning is hooked up against and inside the roof. The work is rough, but it serves the required purpose. These shelters are used by the Jewish Board of Guardians, London, to lend to poor consumptives.

All the above shelters are made in sections to facilitate removal from one place to another. This greatly enhances the cost. Taking the Woolwich shelter, if a similar structure were erected in a garden as a permanent fixture, this could be done for a cost not much over one-half the cost of the movable shelter, say £5.

Sometimes an existing tool or fowl shed can be converted into a serviceable shelter. This was done in one case at Woolwich; windows were made on all four sides and a good floor provided. The estimated cost of the alterations was 18s., exclusive of labour.

The only absolutely necessary furniture is a bed and a chair. Two or three hooks are convenient, and it is usual to provide the shelter with a shelf, which is either fixed or can be raised and lowered.

For shelters which are lent out it is desirable to lend with them a bedstead, say 6 feet by 3 feet or 2 feet 6 inches. The poorer classes frequently have no suitable bed they can spare for the shelter.

Patients do not usually find cold weather any great difficulty, but it may be advantageous to have two mattresses, or two blankets under one mattress. There is no reason why the consumptive should not be as warm and comfortable as he wishes. One or more hot-water bottles will possibly be needed in winter, and for many patients it will be best to sleep between the blankets, without sheets. Heavy cotton quilts should not be used. The patient will seldom find difficulty in excluding the rain from a suitable shelter, but he may not be able to keep out the snow. For this purpose a mackintosh sheet should be provided. This will also be found useful to keep the bed dry in the daytime when there is no one at hand to shut the shutters.

It is found that when the patient becomes very ill, practical considerations of nursing and attendance often make the use of the shelter undesirable. Dr. Lyster's large shelters would enable someone to sleep by the patient, but usually such cases must either be taken indoors or removed to an institution.

Two Metropolitan Borough Councils are providing shelters—viz., Bermondsey and Woolwich. In Woolwich nine shelters have been purchased, and new ones are being obtained as the demand for them increases. These are lent out on a written promise to sleep in them in all weathers, unless otherwise ordered by a medical man, to keep them clean and uninjured, and to allow anyone authorized by the Medical Officer of Health to inspect them at all reasonable times. The Public Health Committee has recently decided to make a weekly charge for the loan of a shelter whenever the family is in a position to pay. The charge varies from 6d. to 1s. 6d. a week according to means. The family is assessed by the Medical Officer of Health. It is found so far that at least half those using shelters are quite able and willing to pay for them, and it seems probable that the income received will cover the interest on capital expended and depreciation of the shelters. So far the shelters only have been provided, and patients have found their own bed and bedding. It will, however, probably be found desirable to make a practice of providing a small bedstead and mattress with the shelter.

Difficulties in the Shelter Treatment.—It has been found in Woolwich, so far, that most consumptives who have not already been to a sanatorium, or had open-air treatment at some other institution—*e.g.*, the Poor Law Infirmary—refuse the offer of a shelter. Even the majority of those who have been to a sanatorium do not readily acquiesce in a proposal to sleep out in their gardens. The objection is chiefly dislike of the publicity, and this apparently is felt more by men than women. The patients do not usually dread the cold, nor have cats or other animals been found to be a nuisance. The fear of human intruders has not been mentioned as an objection. One man refused to allow his wife to sleep out without giving a reason.

The dread of infection by neighbours has been a difficulty in some cases. One woman, for whom a shelter had been erected, was forthwith bombarded with hostile criticism by her neighbour, who, though an intelligent woman, professed to dread the infection for her children, and also objected to the appearance and obtrusiveness of the shelter. The patient was much intimidated, but a diplomatic visit paid by the Medical Officer of Health was successful in abating the fears and establishing the right and necessity of the patient to use the shelter.

In other cases where there were two families in a house, the fear of offending the other family has militated against the use of a shelter. But objections by anyone but the patient have been the exception in Woolwich.

The results of treatment have been very satisfactory. Even cases which appeared to be dying have been temporarily benefited—cough relieved and better sleep enjoyed. One very advanced case greatly

improved after use of a shelter, and was enabled to attend partially to her household duties for several months. She was then persuaded to go for a change to friends in the country, where, of course, she did not sleep in the open air. She rapidly got worse and came home to die. Altogether fifteen consumptives have used shelters in Woolwich, all of whom have been at least temporarily benefited. Of these eight have discontinued their use for the following reasons: Two died; one because the shelter did not keep the rain out (this was a shelter after the early Paddington pattern, which has since been converted); one refused to pay the assessed rent; three went to hospitals, and one to stay with friends. No patient has given up the use of a shelter on account of not experiencing benefit. Advanced cases have been given the preference in bestowing the shelters, in order to lessen infection in the family, so in most cases it was only a question of preventing infection and temporarily prolonging life. When they are lent to persons in earlier stages of the disease, the need for their use is likely to be prolonged. Dr. Lyster has had patients living in this way for several years. In Woolwich the use of shelters was only begun in August, 1910.

CRITICAL REVIEWS.

RECENT VIEWS ON SANATORIUM TREATMENT.

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THE promise of "sanatorium benefit" under the recent Insurance Act has led to further discussions on the value and place of sanatorium treatment in a national anti-tuberculosis scheme. It has been rather the fashion lately in some quarters to represent sanatoria as being useless and expensive, and to assume that they can be replaced by some other agency, such as the municipal dispensary, and the arguments brought forward often show a singular disregard of well-known facts. Tuberculous infection is exceedingly widespread, but it does not necessarily cause illness unless there is constitutional deterioration from unsatisfactory habits or conditions of life, or some other factor. Although it is true that tuberculosis causes ill-health, it is equally true that ill-health causes tuberculous illness; and a rational scheme of treatment should comprise, not only the purely anti-tuberculous remedies, but many other measures which help to build up the general health.[1]

A Complete Anti-Tuberculosis Scheme.

Sir James Barr stated recently[2] that, apart from a few sanatoria for consumptives, there is no provision for institutional treatment provided by the Insurance Act. This, however, is incorrect, as the Act authorizes a local Insurance Committee, with the consent of the Insurance Commissioners, to arrange with any person or authority for

[1] See such recent articles as the following: Philip, R. W.: "The Administrative Control of Tuberculosis," *British Medical Journal* and *Lancet*, August 12, 1911. Williams, C. T.: "Harveian Oration," *British Medical Journal*, October 21, 1911. McElroy, J.: "Tuberculin in Pulmonary Tuberculosis," *ibid.*, September 23, 1911. Walters, F. R.: "The Treatment of Tuberculosis and the Sanatorium Question," *Lancet*, p. 684, March 9, 1912. Consult also — Walters, F. R.; Thomson, H. Hyslop; Steede, B. Horford; Lawson, David; Etlinger, F. K.; Carling, Esther; Crace-Calvert, G. A.; Dixon, G. B.: "The Future of Sanatorium Treatment," *British Journal of Tuberculosis*," October, 1911. See further — Walters, F. R.: "Sanatoria, Tuberculosis Dispensaries, and the Government Insurance Scheme," *Practitioner*, August, 1911. Sutherland, H G.: *British Medical Journal*, September 16, 1911, and the Transactions of the National Association for Prevention of Consumption, July, 1911.

[2] Barr, Sir J.: *British Medical Journal*, December 30, 1911.

treatment in a sanatorium or other institution or otherwise; and with the consent of the Treasury this may be extended to diseases other than tuberculosis.[1] A complete chain of agencies could therefore be built up under the Act, including action by the Sanitary Authorities, open-air schools, municipal dispensaries, general and special hospitals, sanatoria, health camps and farm colonies, and homes for the incurable. All of these agencies are necessary, and they should also be in touch with charitable and other societies whose objects are more purely economic. There are already many anti-tuberculosis agencies scattered over this country, and in every district an attempt should be made to supply missing links and co-ordinate them all.[2]

Sanatorium *or* Dispensary.

Some correspondents apparently regard the tuberculosis dispensary as a substitute for the sanatorium.[3] This is, however, only true to a limited extent. Each has a distinct field of activity, although these may overlap. The two institutions are not antagonistic or alternative, but supplementary to one another.[4] The municipal dispensary (or its possible equivalent, the hospital out-patient department) is essential for early diagnosis, for investigation of home conditions, and for distribution of cases to the appropriate institutions and societies.[5] It can also undertake the treatment of afebrile cases with but little constitutional deterioration. It is unsuitable for the majority of cases requiring rest or physical culture, which form the bulk of those admitted to British sanatoria for the working classes. The conditions in an unreformed working class home are seldom suitable for such cases. Deep-rooted habits cannot be altered without at least temporary removal from home. Graduated exercise and graduated work cannot be employed so long as the patient remains at his ordinary work. Therefore all cases with deteriorated physique require something more than dispensary treatment. The sanatorium should be regarded as a school for special

[1] See *British Medical Journal* Supplement, p. 482, November 18, 1911; *ibid.*, p. 448, February 24, 1912.

[2] Walters, F. R.: *Practitioner*, *loc. cit.* Philip, R. W.: *loc. cit.*

[3] Wilkinson, W. Camac: "Tuberculin and Tuberculin Dispensaries," *British Medical Journal*, p. 403 February 18, 1911. Nash. E. H. T.: *ibid.*, p. 656, March 18, 1911. Wilkinson, W. Camac: "Tuberculosis and Tuberculin," *ibid.*, August 5, 1911, and September 30, 1911.

[4] Consult articles by — McElroy, J.: *loc. cit.* Wynn, W. H.: *British Medical Journal*, September 30, 1911. Sutherland, H. G.: *ibid.*, September 16, 1911. Pringle, A. M. N.: *ibid.*, February 11, 1911. Thomson, H. Hyslop: *ibid.*, March 18, 1911. Philip, R. W.: *loc. cit.* Williams, C. T.: *loc. cit.*

[5] Philip, R. W.: "The Tuberculosis Dispensary," *British Medical Journal*, August 5, 1911. Sutherland, Halliday G.: "The Work of the St. Marylebone Dispensary for the Prevention of Consumption," *British Journal of Tuberculosis*, January, 1912. Sutherland, Halliday G.: "The Dispensary System for the Control and Prevention of Tuberculosis," *ibid.*, April, 1911.

hygiene,[1] a fresh-air hospital for the febrile consumptive,[2] and a physical culture institution.[3] As regards the second of these purposes, it is the successor to the urban chest hospital, which, however useful —nay, essential[4]—is no substitute for the country sanatorium.

Selection of Cases for the Sanatorium.

There is no uniform system of selecting patients for admission to the sanatorium in this country, partly owing to the absence of the necessary machinery, partly to differences in the principles of selection. In Germany the material is probably more uniform, because all beds in the low-price sanatoria are filled by the medical officers of sick clubs and insurance companies on similar lines.

F. W. Price voices the opinion of most authorities when he advises against diagnosing from tuberculin alone, or from one abnormal physical signs alone.[5] Many persons who react with tuberculin would probably remain unaffected in health without special treatment.[6] In a healthy German cavalry regiment, 70 per cent. reacted with tuberculin.[7] E. E. Prest suggests that tuberculous disease be regarded as active if the rectal temperature taken in the morning before rising be above 36·5° C. (97·7° F).[8] It is not wise to depend upon the presence of tubercle bacilli in the sputum, as this throws away the chances of really early treatment,[9] which, as everyone admits, enormously increases the chances of recovery and its completeness.

Ten Years' Experience of Sanatorium Treatment.

A long discussion was started in the medical papers by a doctor who doubted whether patients ever lived ten years after leaving a

[1] Williams, C. T.: *loc. cit.* Steede, B. H.; Lawson, David; Crace-Calvert, G. A.: *British Journal of Tuberculosis*, October 1911. Lister, T. D.: "The Problem of After-Care of Sanatorium Patients," *Lancet*, February 9, 1912. Wynn, W. H.: *British Medical Journal*, September 30, 1911. Wynn, W. H.: "Tuberculin in Pulmonary Tuberculosis," *ibid.*, p. 776, September 30, 1911.

[2] Walters, F. R.: *loc. cit.*, *Practitioner*, August, 1911. Burton-Fanning, F. W.: "The Future of Sanatorium Treatment," *British Journal of Tuberculosis*, October, 1911.

[3] Williams, C. T.: *loc. cit.* Walters, F. R.: *Practitioner*, *loc. cit.* Diver, E. W.: *British Medical Journal*, September 16, 1911.

[4] Williams, C. T.: *loc. cit.*

[5] Price, F. W.: "The Early Diagnosis of Pulmonary Tubercle," *British Medical Journal*, p. 287, February 10, 1912. McElroy, J.: *loc. cit.*

[6] Sutherland, H. G.: *British Medical Journal*, September 16, 1911. Allbutt, Sir Clifford; Brunton, Sir Lauder; Osler, Sir W.; Latham, A.: Welsh Memorial Scheme, *ibid.*, July 15, 1911. Rentoul, J. L.: *ibid.*, September 23, 1911.

[7] Sutherland, H. G.: Discussion on Philip's paper, *British Medical Journal*, August 5, 1911.

[8] See article on "Some Points in the Treatment of Pulmonary Tuberculosis," *Lancet*, p. 723, September 2, 1911.

[9] Garry, T. Gerald: *British Medical Journal*, p. 710, September 23, 1911.

sanatorium.[1] Of course many do so survive, and in good health ;[2] but the test is an absurd one. Sanatorium treatment immensely benefits all cases of only moderate severity. But no working man can afford to stay till he is cured ; and if he did, his continued good health would depend on satisfactory conditions of life, and on how far he applied the lessons learnt in the sanatorium. To blame the sanatorium for a subsequent breakdown under unfavourable circumstances is much like blaming the salicylate treatment of rheumatism, or the recognized methods of treating gout, because of subsequent breakdowns. W. M. Crofton in an interesting paper[3] quotes Elderton and Perry's statement[4] that consumptives discharged from a sanatorium have a much shorter expectation of life than the general population. The same is doubtless true of gouty patients treated at a recognized spa ; but it is no argument against the treatment.

Statistics of Results of Sanatorium Treatment.

There are probably no reliable statistics of the results of sanatorium treatment in this country. Comparisons are worthless as tests of the value of treatment, unless similar material is subjected to the treatment for similar lengths of time, and essential facts are taken into account. To compare the results of treatment in two sets of patients who differ in occupation, rank of life, pecuniary resources, length of treatment, and subsequent conditions of life,[5] is only misleading. Nor can we profitably compare the results in British and foreign sanatoria until we know, not only the extent of disease, but also the amount of constitutional disturbance. Nearly all the classifications adopted in chest hospitals and sanatoria are made according to the Turban-Gerhardt method, or some similar one, based on the extent and severity of the local changes ; but the initial temperature, which is of infinitely more importance in prognosis, is not stated. Some doctors assume that patients entering a British sanatorium are specially selected slight cases.[6] It would be nearer the mark if they were regarded as mostly cases which had been doing badly elsewhere. Even in some full-price sanatoria the proportion of early cases is only

[1] McWalter, J. C. : *British Medical Journal*, October 7, 1911, November 4, 1911, December 7, 1911.

[2] Galbraith, J. J. : *British Medical Journal*, November 11, 1911. Mears, Isabella : *ibid.*, October 28, 1911. Squire, J. Edward : *ibid.*, August 19, 1911, and October 14, 1911. Steavenson, C. Stanley : *ibid.* Brown, Lawrason : *ibid.*, October 7, 1911. Crace-Calvert, G. A. : *ibid.*, October 21, 1911. Diver, E. W. : *ibid.*, August 19, 1911.

[3] Crofton, W. M. : "Prevention and Treatment of Pulmonary Tuberculosis," *British Medical Journal*, p. 297, February 10, 1912.

[4] Elderton and Perry : "A Third Study of the Statistics of Pulmonary Tuberculosis : the Mortality of the Tuberculous and Sanatorium Treatment." London : Dulau and Co., 1910.

[5] Williams, C. T. : *loc. cit.* Wilkinson, W. Camac : *loc. cit.*

[6] Wilkinson, W. Camac : *loc. cit.*

about 18 to 20 per cent., while in some sanatoria for the poor (*e.g.*, Heswall) it was even less.[1]

Tuberculin and the Sanatorium.

Tuberculin is much more favourably regarded by medical men in this country than it was a few years ago, and is probably used in most of our British sanatoria. It can be used with advantage in any stage[2] in the afebrile; but there is still difference of opinion as to its value in cases with fever. There are also great differences in the methods, dosage, and preparations, used by different doctors. Cases without fever tolerate massive doses at comparatively short intervals. Where, however, there is active disease with fever, much greater caution is necessary, as there is often a smart reaction from a small dose, especially at first. Exercise greatly increases the febrile reaction, so that many doctors keep their patients at rest for a few days after each dose. For this reason tuberculin is not a convenient remedy in the out-patient room, excepting for early afebrile cases with limited lesions or quiescent cases of long standing in which more or less tolerance has already been established. The advocates of "tuberculin dispensaries," impressed with the valuable work that can be done in properly selected out-patients, sometimes ignore the numerous cases which can only be safely treated at rest, and which are therefore better treated in a sanatorium.[3] Tuberculin is not an infallible cure. Moreover, as already pointed out, tuberculin only solves half the problem, and leaves untouched the original poorness of physique and the original faulty habits of life which predisposed to the disease. Probably many have been led by Karl Pearson's assertions, as to the heredity of the tuberculous tendency,[4] to under-estimate the more important part played by conditions of life. Pearson's statistics showed that tuberculosis appears in the offspring in about the same proportions as certain normal physical characters known to be inherited. As, however, the material dealt with did not exclude family infection, or the effect of faulty conditions of life common to both parents and offspring, it follows that the part attributable to inheritance must be less than in the inheritance of normal physical characters. Crofton has recently advocated prophylactic doses of tuberculin in families where there are cases

[1] Smyth, R. Mander: "The Future of Sanatorium Treatment," *British Journal of Tuberculosis*," October, 1911. Burton-Fanning, F. W.: *ibid.*

[2] Wilkinson, W. Camac: *loc. cit.*; "The Treatment of Consumption," London, 1908. McElroy, J.: *British Medical Journal*, September 23, 1911. Millard, C. K.: *ibid.*, October 14, 1911. Fell, R. W.: *ibid.*

[3] Thurnam, R.: *British Medical Journal*, August 19, 1911, and September 30, 1911. Wynn, W. H.: *loc. cit.* Diver, E. W.: *loc. cit.* Trevelyan, E. F.: *ibid.*, February 25, 1911.

[4] Pearson, Professor Karl: "A First Study of the Statistics of Pulmonary Tuberculosis." London: Dulau and Co.

of tuberculosis.[1] Whether this is done or not, the other known predisposing causes—hygienic or social—should not be neglected.[2]

After-Care of Tuberculous Subjects.

Working-class patients who leave a sanatorium in improved health often relapse on returning to the old unsatisfactory conditions of home life. Much more should be done to provide suitable accommodation for convalescents returning to work from a sanatorium, in the shape of night-camps where they may sleep in pure air and get wholesome food at a cheap cost, and of hygienic villages where all the usual occupations may be carried out under better conditions than before. In this way there would be some chance of the working-class consumptive remaining long enough under favourable conditions to thoroughly improve his physique.[3] If the middle-class patient in the Alps requires two years, the working man will not require less; and such a scheme would not only cure much tuberculous disease, but would go far to build up a healthy race.

[1] Crofton: *loc. cit*,

[2] Rentoul, J. L.: *British Medical Journal*, September 23, 1911. Allbutt, Sir Clifford; Brunton, Sir Lauder; Osler, Sir W.; Latham, A.: *loc. cit.*

[3] Lister, T. D.: *loc. cit.* McConnel, H. W.: *Lancet*, August 12, 1911. "A Village Sanatorium," *Lancet*, p. 466, August 12, 1911. Philip, R. W.: "A Farm Colony for Cured Consumptives," *British Journal of Tuberculosis*," April, 1911.

PERSONAL OPINIONS.

THE STANDARD OF TUBERCULIN DOSAGE.

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The dosage of tuberculin has always been somewhat of a stumbling-block to its administration. On the one hand, the minute quantities, whether expressed in decimals or in vulgar fractions, are apt to harass the learner; on the other hand, the fluctuating standard of dosage has given rise to endless confusion ever since the introduction of the endoplasm tuberculins in 1897. It is but a few weeks since this bone of contention was fought over afresh in the columns of the *Lancet*, and we may be quite sure that the discussion is still by no means at an end. On this occasion, the reviewer of a recent edition of a familiar textbook deplored, very naturally, the endless ciphers necessitated by the adoption of the cubic centimetre (c.c.) as a standard for tuberculin; the writers of the book, on the other hand, had no difficulty in justifying their adoption of the standard of volume in place of the milligram, and in truth their position is unassailable. Both the criticism and the justification were well founded, and a deadlock appeared to be reached. Fortunately, however, there exists a way out of the difficulty, and this we propose to point out presently.

The History of Tuberculin Standards.

When Koch introduced his "lymph" to the world, even the initial doses recommended were comparatively high, and the cubic centimetre seemed a quite reasonable standard of measurement, so that in his publications of the year 1890[1] this standard alone was used. But in the following year[2] we find Koch speaking of tuberculin in grammes, alternatively to cubic centimetres, and in milligrammes, meaning a thousandth part of a c.c., and from that time onward all these symbols have been in active use wherever old tuberculin has been administered. If old tuberculin had remained the sole preparation, no confusion would have followed this use of alternative standards; but in 1897 new tuberculin

[1] Koch: "Weitere Mittheilungen über ein Heilmittel gegen Tuberkulose," *Deutsch. Med. Woch.*, xvi., p. 1029. 1890.
[2] Koch: Supplementary Papers, *ibid.*, xvii., pp. 101, 1189. 1891.

(T.R.) was introduced, and at this point the real difficulty began. For old tuberculin was an extract from which the solid residue had been removed, and it was thus naturally measured in terms of original fluid; but the new tuberculin was an endoplasm tuberculin, and could be measured either in terms of original fluid or of solid residue contained. Koch, unfortunately, chose the latter element as the basis of measurement, and the milligramme now stood to denote weight of a solid residue in T.R., and was still used loosely as a unit of volume for old tuberculin. Here was cause for confusion, but this was only the beginning of the difficulty. Koch had clearly stated that each c.c. of T.R. contained 10 milligrammes of solid substance (Die Flüssigkeit enthält im c.cm. 10 milligrammes fester Substanz), but in 1907 Wright[1] pointed out that the actual solid content was only 2 milligrammes per c.c. instead of 10, and this was admitted by Professor Ruppel,[2] of the Farbwerke Höchst. It appeared that the 10 milligrammes represented the weight of tubercle powder employed in the preparation of each c.c. of T.R., but some of this was lost during the process. After that confusion waxed wild and furious, and the double nomenclature of T.R. has remained a source of trouble even up to the present. The position is such that if you are told a patient is having, say, $\frac{1}{2000}$ milligramme, it is needful to inquire on which basis the calculation is made, whether on that of 10 milligrammes or of 2 milligrammes to the c.c. A fivefold error of dosage is involved in the issue! Such a state of things was intolerable, for the milligramme now had three totally different meanings. It might equally well be: (*a*) milligramme of original fluid, meaning the thousandth of a c.c. (Koch); (*b*) milligramme on 10 milligrammes per c.c. basis for T.R. (Farbwerke Höchst); (*c*) milligramme on 2 milligrammes per c.c. basis for T.R. (Wright). The only issue from this confusion was through the all-round adoption of the standard of volume of original fluid. Accordingly, Bandelier and Röpke, in the fifth edition of their textbook, after consultation with the Farbwerke Höchst, adopted the cubic centimetre as the standard for all tuberculins, and expressed the dosage in decimals. Thus, $\frac{1}{1000}$ milligramme of T.R. (on the older 10 milligrammes per c.c. basis) becomes a ten thousandth of a c.c. of original fluid, and is expressed as ·0001.

Disadvantages of the Cubic Centimetre.

By the adoption of the cubic centimetre of original fluid as a uniform standard, we obtain accuracy and certainty; but since the dosage of tuberculin used on a rising scale varies fully a millionfold between smallest and

[1] Wright, A. E., Douglas, S. R., Freeman, J., Wells, J. H., Fleming, A.: "Studies in Connection with Therapeutic Innoculation," *Lancet*, ii., 1218. 1907.

[2] Ruppel, W. G.: "Die Herstellung des 'Neuen Tuberkulins' (Tuberkulin T.R.)," *Deutsch Med. Woch.*, xxxiv., p. 185. 1908.

largest, it is obviously inconvenient to put the unit of measurement at the highest point. The result of this is that the initial dose of a course bears the clumsy symbol ·000001 or even ·0000001—a figure difficult for the human mind to grasp, and hence very liable to lead to inconvenient and even dangerous mistakes. This is already illustrated in the fact that in the second edition of Bosanquet and Eyre's textbook "Serums, Vaccines, and Toxins," 1909, the doses of tuberculin recommended for diagnostic use have become, in the process of change into the cubic centimetre standard, 100 times larger than was intended. Such errors may well lead to serious results.

The Use of the Cubic Millimetre.

The disadvantages of the cubic centimetre as a standard being thus clear, it is obvious that a lower volumetric standard of dosage is imperative if tuberculin is to become, as it should, an instrument for good in the hands of the profession at large. Such a standard is conveniently to hand in the cubic millimetre (c.mm.), the equivalent in volume of the milligramme, and the actual quantity referred to by Koch when he spoke of a milligramme of old tuberculin. In a textbook on tuberculin treatment recently published by the writer, in conjunction with Dr. Egbert Morland, the cubic millimetre is adopted as the standard throughout, and it is safe to prophecy that before long the nightmare of dosage on the cubic centimetre standard will be everywhere put to flight by the common adoption of some such lower unit. By the use of the cubic millimetre three ciphers are at once struck off all the figures, and the lowest doses become 0·001 and 0·0001 (instead of 0·000001 and 0·0000001), while the highest now in use—namely, 1 c.c. of original solution—becomes 1,000 c.mm. The doses of old tuberculin commonly used for subcutaneous diagnosis remain 0·2, 1·0, 2·0, 5·0, 10·0, as before, but are designated cubic millimetres instead of milligrammes. The $\frac{1}{1000}$ milligramme T.R., already cited as 0·0001 c.c. original fluid, now sinks to the simple figure 0·1, and it conveniently happens that the same fluid dose of B.E. is of practically equivalent strength.

The use of the cubic millimetre as a standard is fortunately no new departure. Kössler and Neumann,[1] in 1909, recommended its use, and it is probable that others besides Dr. Egbert Morland and the writer have proved by experience its practical utility. Moreover, the cubic millimetre presents no difficulty to those already accustomed to the use of the cubic centimetre. It is easy for them either to adopt it

[1] Kössler, K., and Neumann, W.: "Opsonischer Index und Tuberkulose Therapie nebst Beträgen zur Technik und Dosierung der Tuberkulin Injektionen," *Wien. Klin. Woch.*, xxii., p. 1547. 1909.

or to turn it into their own equivalent, a matter of three ciphers one way or the other putting them immediately on the more familiar footing. The whole matter of a standard of dosage for tuberculin may be put shortly as follows: *Firstly*, the adoption for all tuberculins of a fluid standard, in volume of original fluid, was inevitable, and is being everywhere adopted; *secondly*, the cubic centimetre is but a clumsy and inconvenient fluid standard for a substance whose dosage runs down to a millionth part of this; *thirdly*, a fluid standard midway between the lowest and highest doses employed exists in the cubic millimetre, and this was actually the quantity referred to by Koch when he spoke of a milligramme of old tuberculin. The advantages of the cubic millimetre are so obvious when the matter is investigated that any further statement of its claims to consideration seems to me needless.

INSTITUTIONS FOR THE TUBERCULOUS.

THE OCHIL HILLS SANATORIUM.

THE Ochil Hills Sanatorium near Milnathort, Kinrosshire, was opened in 1902, and has accommodation for fifty patients and staff. It originally cost £40,000, and since then several thousand pounds have

THE OCHIL HILLS SANATORIUM.

been expended in improving the buildings and grounds. This expenditure has been made possible by the generosity of a few philanthropic friends of the institution, whose sole desire is to make it as complete and efficient a special hospital and sanatorium for the treatment of tuberculosis as possible. It is provided not only with all the conditions of a first-class sanatorium, but has electrical and hydropathic departments of the most modern and complete character. Laboratory work, too, has been specially provided for. The sanatorium occupies a beautiful and picturesque situation. Patients look out from their bedroom windows on Loch Leven, which lies about four miles off. On one of its islands they can see the top of the now ruined

castle where Mary Queen of Scots was imprisoned, and they can read the story of her romantic escape in Scott's story of the "Abbot," the scene of which lies before them. The sanatorium is situated at an elevation of 800 feet above sea-level, and its grounds rise to a height of 1,000 feet; it is on a slope of a spur of the Ochil Hills, facing south, and protected from the north and east by pine-clad hills. Its grounds extend to 400 acres, 60 acres of which are woodlands, and comprise moorland, rough hill pasture, and a home farm worked in the interest of the sanatorium, which it supplies with dairy and other produce. This considerable estate, beautifully situated, well wooded, and with three pleasure or fishing ponds, provides extensive and sheltered walks at various gradients. The sanatorium also provides great facilities for the industrial occupation of suitable cases; and to promote this side of sanatorium work the small industrial sanatorium of Coppins Green (founded at Clacton-on-Sea, by Dr. Chapman) was transferred, under the direction and superintendence of Dr. Chapman, to the grounds of the Ochil Hills Sanatorium. The object is to extend the advantages of treatment and of industrial training to those who can only afford a limited fee. The patients get all the advantages which are to be derived from association with a large sanatorium, but their accommodation is necessarily on a less elaborate though quite comfortable scale. There are fifteen beds, and only male patients with early and limited disease are admitted. It is suitable for such as clerks, school-teachers, and skilled artisans. Patients are prescribed work in the extensive gardens, woods, etc., of the institution, according to their medical condition, and with their increasing capacity to work here is a decrease in the fees charged. This scheme of a small industrial or colony sanatorium has proved highly successful; the medical results obtained have so far been very good indeed; and the outdoor working on economic and educational lines have been of value in promoting the contentment and social well-being of the patients. These institutions are within easy reach of the chief centres of population in Scotland and the North of England, and within ten hours of London.

DONALD FRASER, M.D.,
Chairman, Board of Directors.

NOTICES OF BOOKS.

TUBERCULOSIS OF BONES AND JOINTS.

Sir Watson Cheyne is well known as a leading authority on tuberculous disease of the bones and joints, and all will gladly welcome a second edition of his valuable and very complete treatise on these affections.[1] The first seven chapters of the volume are devoted to a detailed consideration of morbid anatomy and pathology, and there is little that is altered or new in this part of the work. In the next chapter the effects produced experimentally by the injection of tubercle bacilli into animals are fully described, and it is shown that the typical tuberculous lesions of the bones and joints met with in the human subject may be produced in certain animals by the introduction of tubercle bacilli. It is well that this experimental proof should be brought prominently forward again, because at the present time it is so universally assumed that "tuberculous" or "strumous" disease of joints are one and the same, whilst the difficulty of demonstrating the presence of tubercle bacilli in these affections in man is often-times very great. A very interesting chapter deals with the accessory factors which are concerned in the production of these affections, and the methods by which the bacilli gain access to the joints. Sir Watson thinks that it is very probable that in most cases the source of the joint infection is diseased bronchial glands, and that the bacilli are carried to the joints by the blood-stream, only a few entering the blood at a time, and being destroyed unless they meet with conditions which favour their deposit in suitable organs. The interesting question whether infection can occur before birth is discussed fully, and the evidence in support of the disease being hereditary, and not merely a predisposition thereto, is examined. Sir Watson sums up by stating that "it would seem that transmission of tubercle bacilli to the fœtus and their development there is a rare condition. I cannot help entertaining the suspicion that this possibly occurs oftener than one would think"; and "that we are going too far in attributing all cases to infection after birth, and in looking on hereditary as only an inheritance of a special susceptibility to the attack of the tubercle bacillus." The general and local treatment of these affections is discussed in full detail. Under the former, climate, rest, exercise, etc., are considered. Sir Watson especially emphasizes that the important point about climate is to choose a place suitable to the patient, and where he feels well and progresses favourably. Some places and climates will suit one patient but not another. This point is often forgotten; as a result, patients are sent blindly to one place which has a reputation, and quite irrespective of its suitability for the patient,

[1] "Tuberculous Diseases of Bones and Joints: Their Pathology, Symptoms, and Treatment." By Sir W. Watson Cheyne, Bart., C.B., F.R.C.S., F.R.S., etc., Professor of Clinical Surgery at King's College Hospital; Senior Surgeon to King's College Hospital, etc. Pp. xi+404, with 170 illustrations. Oxford Medical Publications. London: Hodder and Stoughton; and Henry Frowde, Oxford University Press. 1911. Price 16s. net.

with the result that only too often the expected benefit does not accrue. With regard to tuberculin, Sir Watson cannot convince himself that "he has seen any greater improvement in joint and bone diseases than one would have expected to follow careful treatment on expectant lines." It would seem as if the advocates of the tuberculin treatment had neglected the fact that, in addition to the injections of this substance, other important methods of treatment are used at the same time. We now know that tuberculous diseases are much more amenable to general and local treatment than was formerly thought to be the case. Consequently, operative interference is now required much less frequently than formerly. In the past, operations were often undertaken with the view to eradicate the disease, to prevent the dissemination of tubercle, and "to cure" the patient. At the present day excisions and amputations are only rarely required, and then generally in neglected cases. Our views in regard to the treatment of tuberculous abscesses are also undergoing modifications; instead of opening, scraping, and irrigating them, aspiration and the injection of a "modifying fluid" is all that is necessary in many cases. Sir Watson utters a warning against carrying conservatism too far in respect to operations. The latter part of the book is devoted to the treatmeat of disease of individual joints and of the spine. Full details are given of the methods which should be adopted in the various stages of the disease. The exigencies of space prevent a more exhaustive review being given, but enough has been said to show that the book is eminently practical, and speaks with the authority of one who knows his subject.

T. P. Legg, F.R.C.S.

THE HYGIENE OF SCHOOL LIFE.

A series of "National Health Manuals" designed for those interested or engaged in social service is being issued under the editorship of Dr. T. N. Kelynack. Their aim is to provide essential facts in concise language and compact form, and to indicate governing principles in simple, non-technical words. "School Life" is the third of the series.[1] As the title indicates, this volume covers the whole period of a child's attendance at school. The book opens with an introduction by the editor, in which is presented a high ideal of the care which ought to be bestowed upon the school child. Attention is drawn to the necessity for the co-operation of the parent with the teacher in the education and training of the child, and it is pointed out that the ultimate purpose is the formation of character. The next chapter is written by Dr. A. S. Arkle, the subject being the Characteristics of School Children. The influence of diseases and defects as well as of external factors is discussed, and the importance of the existence of mutual understanding and confidence between teacher and taught is emphasized. Dr. Charles Porter deals with the Hygiene of the School. The subject is treated fully though concisely. In the short space at one's disposal it is only possible to draw attention to a few of the leading features of the book under review, and here we may mention

[1] "School Life." Vol. III. of the National Health Manuals. Edited by T. N. Kelynack, M.D. Pp. viii + 160. London: Charles H. Kelly, 25-35, City Road, and 26, Paternoster Row, E.C. Price, cloth limp, 1s. net; cloth boards, 1s. 6d. net.

specially the recommendation to introduce shower baths into the schools, as in our own experience we have found them of great value, and much more healthy than the weekly hot bath taken at night. Some debateable points also emerge. For example, it is said that the height of a classroom should not exceed 12 or 13 feet, yet a well-known authority states that if the area of the floor exceeds 600 feet, the height of the walls must be not less than 14 feet. Dr. Bridge writes on the "Medical Inspection of the School Child," and briefly speaks of the treatment of children found defective. Dr. Taylor treats of the School Child Worker, and gives interesting illustrations from his own district of the bad effects of the half-time system as observed by him. Dr. Barrie Lambert describes the Physical Education of the School Child, whilst Dr. Myra Mackenzie treats of the Personal Hygiene of the School Girl, and Dr. Symes of that of the School Boy. Then follows a chapter by Mr. Wallis on Dental Condition in School Children, in which reference is made to dental clinics. Dr. Lapage describes Mentally Defective Children in a short but instructive chapter. Physically Defective Children are discussed by Dr. Rayner, and the advantages of special day schools and open-air schools are explained. In the concluding chapter Dr. Edwards writes of the School Child and Citizenship, and draws attention to the necessity for improving the environment of the child by the amelioration of its social condition. In a series of appendices references are given to various books and journals which treat of the subjects dealt with in the various chapters.

ERNEST T. ROBERTS, M.D., D.P.H.

TUBERCULIN AND TUBERCULIN DISPENSARIES.

Dr. Camac Wilkinson's views on the advantages of tuberculin and so-called tuberculin dispensaries are well-known to serious students of the tuberculosis problem. It is well, however, that the medical profession should have a full and authoritative exposition of Dr. Wilkinson's opinions and methods, and know his arguments for the advocacy of "Tuberculin Dispensaries." This is wisely provided for in a new edition of his Weber-Parkes Prize Essay of the Royal College of Physicians.[1] It is a remarkable production, possessing much of the merits of a pioneer work, and presenting facts, figures, clinical records, hypotheses, and practical suggestions; it is nevertheless marred by redundancies, repetitions, extravagancies, eccentricities, and an egotism and descent into personalities which are greatly to be regretted. If Dr. Camac Wilkinson could have left his work unreservedly in the hands of a judicious editor, an epoch-making volume would probably have resulted. Still, as it stands, the book calls for careful and unprejudiced consideration. Dr. Wilkinson has undoubtedly done much to quicken interest in, and study of, the treatment of tuberculosis by tuberculin, and although there is much in his methods, and more in his manner of advocacy, which cautious physicians cannot approve, it is but right that he should be recognized as possessing many of the virtues as well as

[1] "Tuberculin in the Diagnosis and Treatment of Tuberculosis" (Weber-Parkes' Prize Essay, 1909) with additions. By W. Camac Wilkinson, B.A., M.D., F.R.C.P., late Lecturer in Pathology (1884-1901) and Medicine (1901-1910) in the University of Sydney. Pp. xxiv+492. London: James Nisbet and Co., Ltd., 22, Berners Street, W. 1912. Price 21s.

the regrettable limitations of a pioneer. Within the restrictions of a short notice it is impossible to deal adequately with such a far-reaching work as this. We commend it to the thorough study of our readers. Dr. Wilkinson writes: "I have come to the conclusion that in at least 80 per cent. of the cases in the first stage one can dispense altogether with sanatoria, that at least in 60 per cent. of the cases in the second stage sanatoria treatment is not indispensable, and that even in cases in which sanatoria utterly fail to do any permanent good, tuberculin can often bring the disease to a standstill, at any rate, for many years." Medical practitioners will find the most valuable portion of the book that which deals with the author's methods of technique. As to the use of Wright's opsonic index, the summary verdict is passed that it is "faulty, flimsy, and futile," an unjust condemnation unhappily expressed. As to the oral administration of tuberculin formerly advocated by Dr. Arthur Latham, Dr. Wilkinson rudely writes: "It is surely high time that we should give a decent and final burial to the view that tuberculin given by the mouth is a reasonable and useful procedure—the mourners should be wiser if sadder men." Perhaps the most interesting and suggestive portions of the book are those which deal with the tuberculin dispensary and the Insurance Act in relation to the treatment of consumption. Dr. Wilkinson points out that Mr. Lloyd George calculates that there are 300,000 to 400,000 consumptives needing treatment. "Even if we had as complete a chain of sanatoria as they have in Germany at the present time, we could deal with no more than 30,000 out of this multitude, and all Mr. Lloyd George's funds for the purpose would be exhausted." It is estimated that in London alone "there are about 40,000 persons suffering from tuberculosis who cannot themselves pay for proper treatment." For these, £200,000 would provide about 800 beds. If each case stayed in the sanatorium six months, 1,600 cases would be treated in a year. "Among the poorer classes more than 50 per cent. of the cases thus treated would relapse within three or four years, so that no more than 800 out of 40,000 cases would be permanently benefited." Dr. Wilkinson's data certainly deserve thorough consideration. It is to be hoped that the Advisory Committee now sitting on the question of National Insurance and Tuberculosis will investigate these figures and let us have their conclusions. "If sanatoria were the best and only means of dealing with the problem, London alone would need, not 800, but at least 8,000 beds for the work, and the cost of buildings would be £2,000,000, and the cost of maintenance would be about £500,000 a year. Even then in one year less than 50 per cent. of the cases could be treated." Dr. Camac Wilkinson's solution of the difficulty is tuberculin dispensaries. "In London we rent for £60 a year a house where two doctors can easily treat 300 odd cases every year. Thus London would need 100 such dispensaries for dealing with all the cases. Two doctors specially trained in the methods of tuberculin treatment would be required at each dispensary. Allowing £250 a year to each doctor, and £300 a year for the cost of tuberculin, we should be able to treat 300, even 400, cases, at a cost not exceeding £1,000 a year. Thus the total cost of treating 40,000 cases in London needing assistance would be less than £100,000 a year." Dr. Wilkinson's scheme and estimates demand the most careful analysis. The book, with all its shortcomings,

is a notable one. It has evidently been issued in haste, and there is no index—a grave omission. It is to be hoped that a revised and condensed and expurgated edition suitable for the needs of the busy practitioner will soon be available.

MILK AND TUBERCULOSIS.

The much-discussed question of the relationship of milk to tuberculosis receives full consideration in Dr. W. G. Savage's recently published work on milk and its influence on public health.[1] This work furnishes an admirable treatise for Medical Officers of Health and others concerned in the organization and administration of measures for insuring a pure milk-supply. It treats of the chemical and cellular contents of cow's milk, the sources, varieties, and effects of bacterial contamination, milk-borne infectious diseases, and the relationship of milk to child mortality. A large section of the volume is devoted to a description of the bacteriological examination of milk and public health control of the milk-supply. Readers of this journal will be specially interested in the informing, judicious, and serviceable section regarding tuberculosis of the cow in relation to human disease, and the prevention of human tuberculosis of bovine origin. Dr. Savage says that "it is probably safe to assume that 25 to 30 per cent. of cows in this country are suffering from tuberculosis," and "that tubercle bacilli may and do gain access to milk from cows which clinically show no signs of udder tuberculosis, or indeed of any form of tuberculosis." It is said that about 2 per cent. of cows suffer from a tuberculous udder. Quoting the experience of Sheffield, it is stated that "in 16·4 per cent. of cases, on an average, tubercle bacilli were found in milk produced by cows passed by a skilled veterinary inspector specially on the look-out for the condition, as free from udder tuberculosis." Tubercle bacilli are found in from about 4 to 10 per cent. of mixed milk samples. In Birmingham, prior to 1908, it was 14 per cent. Dr. Savage's opinion regarding the infection of man from bovine sources is of much interest. "While pulmonary tuberculosis is almost invariably of human origin, a considerable proportion of the cases of other varieties of tuberculosis, especially glandular and intestinal infections in children, are infected with bacilli of bovine type, and derived from bovine sources. . . . There is also a possibility which, if true, will make the percentage of human tuberculous cases of bovine origin much higher. The difference between the types of bacilli are differences of degree, and it is a possible supposition that bovine bacilli ingested in early life may, under the influence of a human environment, be extensively modified in type, and ultimately approach the human type. The isolated bacilli being then of human type, the infection will be ascribed to a human source while bovine in origin." Practical workers will find much serviceable material in the sections dealing with the control and elimination of bovine tuberculosis, and the prevention of human infection from material containing bovine tubercle bacilli. The whole work is a valuable contribution to preventive medicine and public health administration.

[1] "Milk and the Public Health." By William G. Savage, B.Sc., M.D., D.P.H., County Medical Officer of Health, Somerset. Pp. xviii+459, with 35 illustrations. London: Macmillan and Co., Ltd. 1912. Price 10s. net.

Messrs. J. Bibby and Sons, of Liverpool, are publishing an important work on milk, and the volume dealing with "Bovine Tuberculosis" has just been issued.[1] The work has been prepared under the guidance of the Director of Bibby's Milk Laboratory, at Waterloo Road, Liverpool, and neither trouble nor expense have been grudged in making it thoroughly serviceable. It will be of great assistance to Medical Officers of Health and other students of the tuberculosis problem, not only on account of the wealth of references and the excellence of the illustrations, but also for the valuable material which has been collected and presented in orderly array. The relationships of human and bovine forms of tuberculosis are discussed, and a plan of campaign for the suppression of bovine tuberculosis is fully described. Considerable space is devoted to the much-disputed question of tuberculous infection from milk during childhood. The volume has been compiled with great care and thoroughness, and forms one of the most effective of recent reference works on the subject of bovine tuberculosis. It is inexplicable why, at this time of day, so important a work should have been allowed to be issued without an index. This error should be rectified as soon as possible.

Mr. Wilfrid Sadler, in his new book on bacteria and dairy-farming, deals with the question of tuberculous milk.[2] The whole book is based on a series of articles on "The Microbe and the Dairy-Farmer." It furnishes, in attractive form, a reliable account of the action of bacteria in dairying, the making of cheese and butter, and their influence in regard to milk. The statement is made that "the tubercle bacillus does not multiply in milk; any germs of this species which gain an entrance remain alive for some considerable time, but no multiplication at all takes place." It is further stated that "the tubercle bacillus is easily destroyed by heat, a temperature of 154° to 156° F. for twenty to thirty minutes accomplishing this with certainty, while Bang considers that a temperature of 185° F. for five minutes gives absolutely reliable results." The manual is one which may well be studied by the ordinary reader, but it will appeal especially to those who are engaged in the handling of milk and the preparation of milk products.

PULMONARY TUBERCULOSIS.

Dr. F. G. Griffiths has been well advised in publishing his thesis for the Doctorate in Medicine of the University of Sydney, for it affords in convenient form much information regarding modern methods of dealing with consumptives by the administration of tuberculin, and it also gives the result of the author's experience and investigations, not

[1] Bibby's "Book on Milk: Section IV. Bovine Tuberculosis: Cause, Cure, and Eradication." A summation of material facts and eminent opinions for the use of farmers, cattle-owners, milk-producers, veterinary students, and others, with appendices on the diseases which simulate tuberculosis, etc. Pp. xvi+459, with 80 illustrations, including 11 full-page coloured plates and 35 portraits of eminent authorities. Liverpool: J. Bibby and Sons, Feeding Experts, King Edward Street. 1912. Price 10s. net.

[2] "Bacteria as Friends and Foes of the Dairy Farmer." By Wilfrid Sadler. Pp. xv + 112, with 8 illustrations. London: Methuen and Co., Ltd.,. 36, Essex Street, W.C. 1912. Price 1s. 6d.

only with tuberculin, but regarding Arneth's researches on the neutrophile leucocytes in pulmonary tuberculosis.[1] The most interesting and useful portion of the monograph is that which deals with the employment of tuberculin according to the methods advocated by Dr. William Camac Wilkinson. Dr. Griffiths is an enthusiastic disciple, and certainly he presents considerable evidence as to the good effects of judiciously-administered tuberculin. He, however, recognizes the need for care and restriction. "Tuberculin, 'the most active drug in the Pharmacopœia,' should not be employed therapeutically except by those who have had special experience in the requisite methods, and have learnt to avoid most, if not all, of those mistakes which are, alas, so easily perpetrated." We commend the work to those who desire a judicious guide to the administration of tuberculin, both for purposes of diagnosis and treatment. The references to recent literature will be helpful to students of tuberculosis.

MANUALS FOR MEDICAL PRACTITIONERS AND WORKS OF REFERENCE.

Medical Science, as with all matters controlled by human influences, is apt to run in grooves, and is certainly directed in a measure by fancy and fashion. This is particularly the case in regard to such a medico-sociological question as tuberculosis. For the moment but little interest is taken in the morbid anatomy and histology of tuberculosis. It is unfortunate that this should be so, for undoubtedly, through the influence of modern methods of treatment, the clinical features of the disease have undergone considerable modification of recent years, and it is but reasonable to believe that careful investigation would reveal at least some alterations in the macroscopic and microscopic appearances of tuberculous tissues, especially those of the lung. This leads us to urge upon medical officers in those sanitoria and hospitals where advanced cases of pulmonary tuberculosis are dealt with, to lose no opportunity of submitting all cases to a thorough post-mortem examination where possible. An admirable guide to the conduct of autopsies has been prepared by Dr. Charles R. Box, and may be commended to pathologists and medical superintendents as a reliable and helpful practical manual.[2] The procedures described are based upon methods used at St. Thomas's Hospital and are such as experience has proved to be satisfactory. The directions for the examination of the thorax and the investigation of the lungs and other intra-thoracic contents will be found particularly serviceable. Good descriptions are given of tuberculous lesions in the lungs and other tissues of the body.

[1] "Studies in Pulmonary Tuberculosis: its Dissemination, Specific Diagnosis, and some Points in its Pathology." By Frederick Guy Griffiths, B.A., M.D., Ch.M., Hon. Pathologist and Hon. Assistant Physician, Royal North Shore Hospital of Sydney. Pp. iii + 113, with charts and diagrams. London: Baillière, Tindall and Cox, 8, Henrietta Street, Covent Garden, W.C. 1911. Price 5s. net.

[2] "Post-Mortem Manual: A Handbook of Morbid Anatomy and Post-Mortem Technique." By Charles R. Box, M.D., B.S., B.Sc., F.R.C.P., F.R.C.S., Physician to Out-Patients and Demonstrator of Morbid Anatomy, St. Thomas's Hospital. Pp. xi + 335, with 19 figures. London: J. and A. Churchill, 7, Great Marlborough Street, W. 1910. Price 6s. net.

Every sanatorium should aim at being, at least to some extent, a station for meteorological observations. The record of climatic conditions affords interesting and instructive work to intelligent patients. A useful manual on climate and weather has recently been written by Professor H. N. Dickson.[1] In clear, definite language the essentials are presented regarding the nature and physical properties of our atmosphere and the influence of land and sea upon it. The prevailing conditions of various climatic regions are dealt with, and finally a chapter is devoted to the all-important subject of "Climate and Man." Professor Dickson's monograph is a member of the excellent "Home University Library of Modern Knowledge."

Garlic has for long had a reputation in Ireland and elsewhere as a useful agent in the treatment of tuberculosis. Dr. W. C. Minchin has subjected this claim to careful investigation, and recorded his results in an interesting monograph.[2] In his preface he states: "I am at length able to bring forward my methods of applying allyl sulphide to the different phases of tuberculosis, believing it, as I do, to be the best and most practical remedy which has hitherto been brought before the profession for the purpose of combating this disease, when amenable to treatment of any kind, and, above all, to advance its claims as a prophylactic." Dr. Minchin also describes in his work an excellent form of naso-oral inhaler, which has been noticed in a former issue of this journal (April, 1911).

The use of physical exercises and mechanical forms of treatment are growing in favour, and when employed with skill and judgment are often of much service. Mr. Middleweek has prepared a useful brochure,[3] "with the view of assisting those practitioners who have not access to a properly equipped medical gymnasium, and who are alive to the fact that remedial exercises have a great influence upon certain medical and surgical complaints." The work contains much that is suggestive and informing, and will assist medical advisers in the selection of exercises suited to the needs of many different classes of patients.

The system of exercises introduced by Lieutenant J. P. Müller, under the high-sounding title of "My System," is now well known and, indeed, deserves the popularity it has achieved. The exercises might well be employed by many patients in sanatoria, and would certainly be of service in the "after care." Mr. J. P. Müller has now prepared a description of a course of exercises specially suited to the needs of women.[4] The book is well illustrated, and contains matter likely to be of service for women and girls in schools, colleges, and

[1] "Climate and Weather." By H. N. Dickson, M.A., D.Sc., F.R.S.E., President of the Royal Meteorological Society and Professor of Geography in University College, Reading. Pp. viii+256, with 4 plates. London: Williams and Norgate, 14, Henrietta Street, Covent Garden, W.C. 1912. Price 1s. net.

[2] "The Treatment, Prevention, and Cure of Tuberculosis and Lupus with Allyl Sulphide." By William C. Minchin, M.D. Pp. xi+88, with 5 figures. London: Baillière, Tindall and Cox. 1912. Price 3s. 6d. net.

[3] "Medical Gymnastics and Massage for the Treatment of Disease, Deformity, and Injury." By Frederick F. Middleweek, L.R.C.P., L.R.C.S.E. With an Introduction by Dr. J. Arvedson. Pp. xi+33. London: John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, W. 1912. Price 2s. 6d. net.

[4] "My System for Ladies." By J. P. Müller. Pp. 94, with 100 illustrations. London: Ewart Seymour and Co., Ltd., 12, Burleigh Street, W.C. Price 2s. 6d. net.

other educational establishments, as well as for guidance in home life. A further volume[1] by the same author deals with "fresh air" procedures, including air- and sun-baths. A chapter is devoted to "the fight against tuberculosis." This remarkable booklet, both for the sake of its illustrations as well as its matter, should not be overlooked by medical practitioners, for there is no doubt it will encourage some to adopt hygienic methods of life, although in somewhat extreme forms.

The Agricultural and Horticultural Association, by the publication of their popular and inexpensive handbooks are doing much to train the people to the benefits of out-door life, and are at the same time encouraging a love for and skill in gardening and other horticultural pursuits. We recommend this year's issue of "One and All Gardening"[2] to our readers, and also the recent additions to "One and All Garden Books."[3]

An up-to-date Medical Directory is now a necessary part of the equipment of every doctor's consulting room and the office of every hospital and sanatorium. "Nisbet's Medical Directory," which made its first appearance in 1908, is increasing in favour and growing in power for service. This year's issue is excellent. The full name of every medical practitioner is given in alphabetical arrangement, but an almost equally useful grouping for reference is provided by a classification of medical practitioners under the names of places, these being also in alphabetical order. The work is invaluable for easy and rapid reference, and, moreover, it is of handy size and inexpensive.[4]

In all forms of medico-sociological endeavour it is wise to attempt to see ourselves as others see us. Criticism of British anti-tuberculosis methods by American and European observers is usually helpful. A French view of the campaign against tuberculosis as carried on in this country has recently been published, and merits careful consideration.[5] Dr. Maurice Guerbet has prepared a comprehensive and informing report which, without being exhaustive, provides a good general account which will be of interest to many British workers as well as instructive to our French confrères.

Merck's Annual Reports are always worth perusal and saving for purposes of reference. The current volume[6] contains useful descriptions of the employment of tuberculin, sodium cacodylate, guaiacol cacodylate, strychnine cacodylate, sodium monomethyl-arsenate, carbenzyme, gomenol, limonene, and other new preparations.

[1] "The Fresh Air Book." By J. P. Müller. Pp. 136. London: Office of *Health and Strength*, 12, Burleigh Street, Strand, W.C. Price 2s. 6d. net.

[2] "One and All Gardening for 1912." Edited by Edward Owen Greening. Pp. 122, with illustrations. London: Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C. Price 2d.

[3] "Small Greenhouses," by T. W. Sanders, F.L.S., pp. 20, with illustrations; "Window Gardens," by T. W. Sanders, F.L.S., pp. 20, with illustrations; "Monthly Reminders," by Leslie Greening, F.R.H.S. London: Agricultural and Horticultural Association, Ltd. 1912. Price 1d. each.

[4] Nisbet's "Medical Directory," 1912. In two parts. Part I. Directory of Medical Practitioners; Part II. The Local Directory. London: James Nisbet and Co., Ltd., 22, Berners Street, W. Price 8s. 6d. net.

[5] "La Lutte contre la Tuberculose dans le Royaume-Uni de Grande Bretagne et d'Irlande." Par Maurice Guerbet, Professeur à l'École de Médecine et de Pharmacie de Rouen. Pp. 185. Paris: Jouve et Cie., 15, Rue Racine. 1911.

[6] "E. Merck's Annual Report of Recent Advances in Pharmaceutical Chemistry and Therapeutics." Vol. xxiv., pp. 419. London: 16, Jewry Street, E.C., and Darmstadt. 1911.

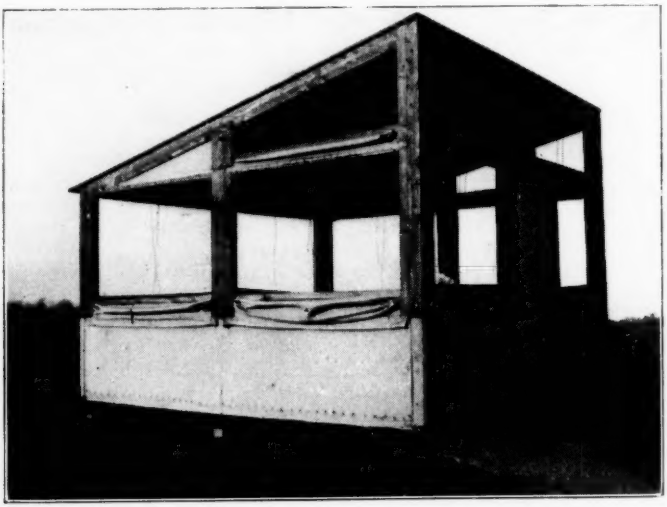
PREPARATIONS AND APPLIANCES.

"DIORADIN."

In the last issue of this journal we published an important article on "The Action of Radium and 'Dioradin' in Tuberculosis," by Dr. Leonard Robinson, of Paris. "Dioradin" is a combination of radio-active iodine with menthol, and its anti-bacillary action seems to depend mainly on the radium which it contains. It is being strongly advocated as a valuable agent in the treatment of tuberculosis.[1]

SHELTERS FOR TUBERCULOUS PATIENTS.

The National Insurance Act has directed both professional and public attention to the urgent need for more adequate provision for consumptive and other tuberculous cases. At present the hospitals

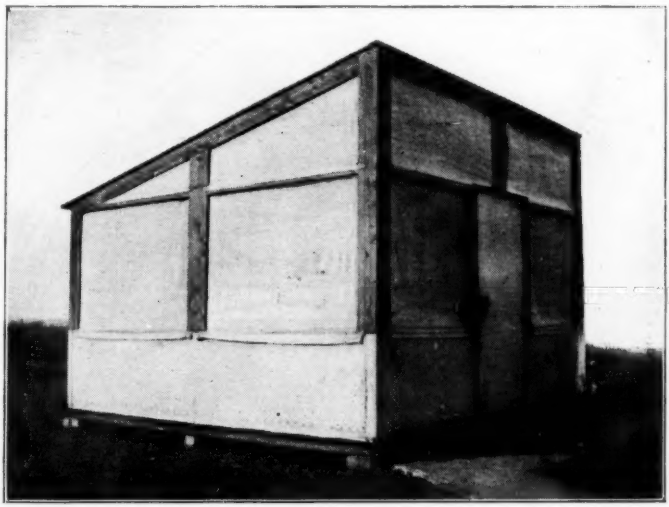


THE LYSTER SHELTER (OPEN).

and sanatoria available for the necessitous victims of tuberculosis are altogether insufficient. It is certain that increased accommodation for the sufferers from this dire disease will be among the first and most urgent demands of those who come within the benefits of our new

[1] Particulars regarding "Dioradin" will be supplied to medical practitioners on application to the Dioradin Agency, 133, Oxford Street, London, W.

National Insurance Scheme. But for some time to come, at least, institutional treatment will not be possible for a large proportion of cases requiring assistance. Moreover, it is now known that patients who have undergone sanatorium treatment usually require a prolonged period of after-care supervision and hygienic management. It seems likely, therefore, that for some time to come, many tuberculous patients will have to be dealt with under home conditions or receive assistance by what may be considered modified sanatorium procedures. In the rational conduct of such, "the shelter" plays an important part. We are glad, therefore, to find that increasing attention is being devoted to the invention and construction of inexpensive and efficient shelters.



THE LYSTER SHELTER (CLOSED).

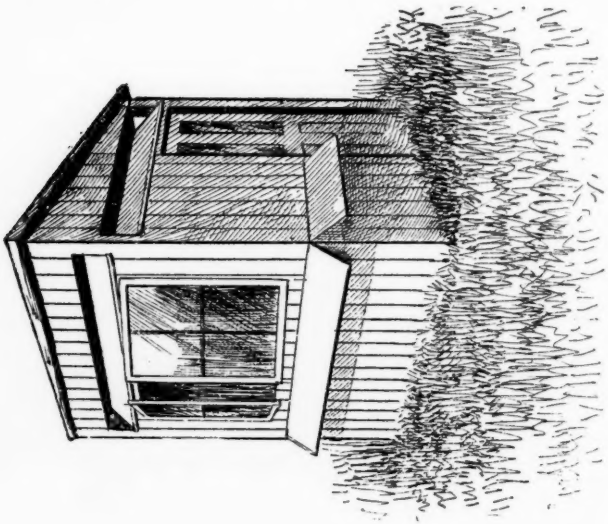
At the recent exhibition of the Royal Sanitary Institute several good forms of shelters were shown.[1] On the Continent many excellent forms of temporary and portable buildings have been erected in accordance with the Doecker system. Hygienic constructions on these lines offer many advantages, and are coming into use in this country.[2]

Dr. Sidney Davies elsewhere in this Journal explains the advantage of shelters in the home treatment of cases under municipal and voluntary services. Among the shelters now available for patients, reference may here be made to several of the best forms.

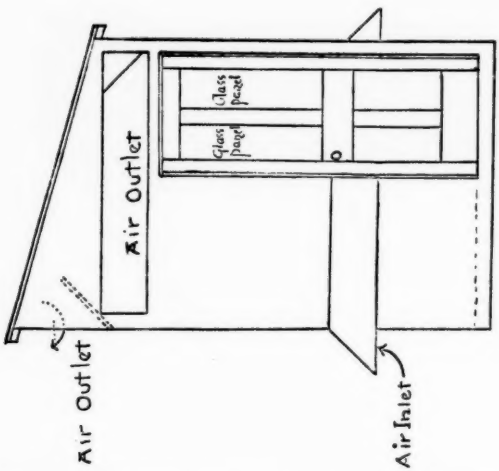
[1] See "Catalogue of Collection of Models and Plans Illustrating Methods of Construction of Economical Forms of Sanatoria and other Temporary Buildings." London: The Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.

[2] The sole rights for the manufacture and sale of Doecker buildings in Great Britain and the Colonies have been acquired by Hygienic Constructions and Portable Buildings, Ltd., Stockholm Road, South Bermondsey, London, S.E.

The LYSTER SHELTER has been designed by Dr. A. E. Lyster, of Great Baddow, Chelmsford. It has a size of 12 feet by 12 feet, and is



THE PURE-AIR SHELTER.

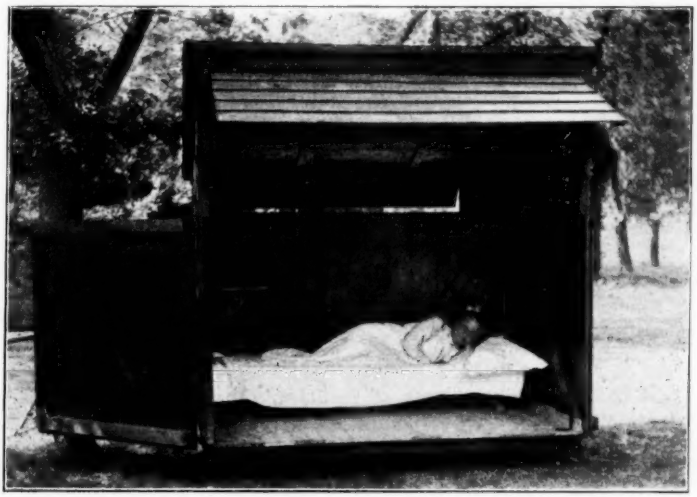


THE PURE-AIR SHELTER (SIDE ELEVATION).

thus large enough to accommodate two beds. It has a raised floor, wooden frame sides with heavy canvas fixed to the height of 2 feet 6 inches, and a sloping waterproof canvas roof. Protection is pro-

vided for by light canvas screens. The two accompanying illustrations indicate the chief features of this cheap shelter (see pp. 124 and 125).[1]

The PURE-AIR SHELTER has been designed by Dr. Halliday Sutherland. It has been fully described in a previous number of this journal, but we here give figures which will remind our readers of its special features. Its size is 8 feet by 6 feet, and it is 9 feet 6 inches high in front, and 8 feet at the back. The walls are constructed of red deal framing, are covered outside with ¾-inch grooved and tongued boarding, and lined inside with ½-inch beaded match lining. The roof is of ¾-inch boarding fixed to rafters and covered with ruberoid roofing. The windows consist of three casement sashes, twin front and one behind, hung to open outwards. Openings, protected from driving



THE STREET SHELTER (OPEN).

rain, are arranged round and near the top, and also 2 feet 6 inches from the floor, giving altogether about 56 square feet of opening (p. 126).[2]

The STREET SHELTER is one of the simplest and cheapest yet introduced. It is made of well-seasoned wood, treated with a special preservative on the outside and varnished within. It has provision for permanent ventilation under the roofing flap, and the top weather guard can be folded inwards and fastened back under the roof. The illustration annexed gives a good general idea of the shelter. It is

[1] The Lyster Shelter is manufactured by Hill Brothers, contractors, Northwood, Middlesex. Price for shelter, 12 feet by 12 feet, £11 11s.; for 9 feet by 9 feet, £10. Free on rail.

[2] The Pure-Air Shelter is manufactured by Mr. George Beattie, 296, Sandycombe Road, Kew Gardens, London, S.W. Price £18, exclusive of glass, and free on rail. A cheaper type of shelter of lighter construction, smaller, and match-lined on one side only, with ordinary felt roofing, is supplied at £12 10s.

7 feet long, 5 feet wide, 5 feet high at back, and 7 feet high in front; and each shelter is provided with a camp stretcher bedstead, and a small flap table. We understand that the shelter was designed by the Nurses Union for Social Service, and that special terms may be arranged if orders are sent direct to the Secretary, Miss Joseph, Woodlands, Holford, Bridgewater, Somerset.[1]

Another shelter which has been described in a previous number of this journal is the STANLEY BATES SHELTER. This offers many advantages, including an arrangement by which the patient can adjust the shutters from the inside, so avoiding any necessity for having to leave the building.[2]

Dr. R. Foster Owen has also invented an artistic châlet-like shelter, to which the name of the ECONOMIC CHÂLET has been given. This has also been described in a former issue.[3]

Last, but by no means least, reference must be made to the admirable hospital and sanatoria buildings and shelters which are designed and constructed by Messrs. Boulton and Paul, Ltd., of Norwich. We advise our readers to procure a copy of their catalogue, No. 189, "Shelters and Châlets," which will be sent post free on application. The revolving shelters provided by this well-known firm, as we can ourselves testify, are thoroughly reliable. They are strongly built from carefully selected material, and are durable, serviceable, and pleasing in appearance.[4]

A HYGIENIC WATER-CLOSET SEAT.

Although elaborate arrangements are made for the collection and disposal of tuberculous sputum, it is remarkable how even in some of our best hospitals and most ably conducted sanatoria, less attention is given to insuring sanitary disposal of the intestinal and urinary excretions. And yet tubercle bacilli are commonly present in the fæces and sometimes occur in the urine of tuberculous subjects. Every pathologist knows how common it is to meet with tuberculous ulceration of the intestines in consumptives, even when no symptoms of its occurrence has been observed during life. But tubercle bacilli in the motions are not dependent upon the presence of tuberculous lesions in the alimentary tract, for it is well known that children and many other subjects of pulmonary tuberculosis swallow

[1] The Street Shelter is made by Mr. Richard W. Godfrey, Street, Somerset. Price £3 15s., exclusive of carriage. If provided with sides to open for non-windy days, £4 10s. For an additional 28s. 6d. the shelter can be placed on a revolving platform, so allowing for change of aspect to suit winds and sunlight. The same manufacturer provides modifications of this "Street Shelter," under the names of "The Taunton Shelter" and "The Holford Shelter," at £5 and £5 15s. 6d. respectively.

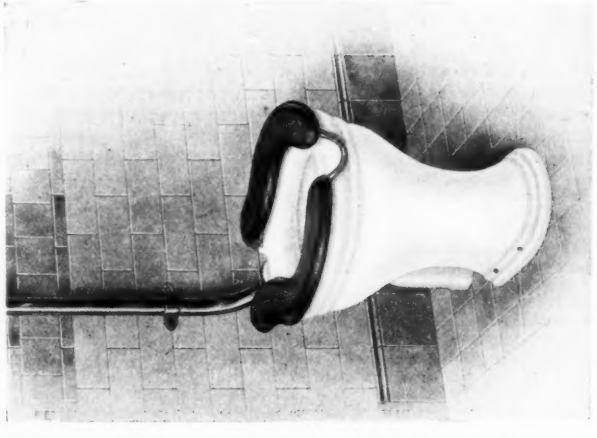
[2] Particulars of the Stanley Bates Shelter may be obtained on application to the Open-Air Shelter Company, North End, Croydon.

[3] Specifications for the Economic Châlet may be obtained on application to Dr. Foster Owen, 82, Southwark Bridge Road, London, S.E.

[4] A shelter, 7 feet by 6 feet by 9 feet, mounted on revolving gear, is supplied by Messrs. Boulton and Paul, Ltd., Norwich, at £12 10s. One of these may be seen at the Sanatorium of the National Children's Home and Orphanage, Harpenden, and other forms of the Boulton and Paul shelters may be met with in many sanatoria and in private homes throughout the country.

the major portion of the tuberculous discharges from the lungs. But not only on account of the danger of tuberculous contamination, but on account of the risks of spreading syphilis and other venereal diseases, it is most desirable that greater attention should be devoted to the provision of more sanitary arrangements in hospitals, sanatoria,

THE "SANITOR" W.C. SEAT (OPEN).



THE "SANITOR" W.C. SEAT (CLOSED).

and other institutions. No one acquainted with the condition of many water-closets in public lavatories and at railway stations and in trains, but will realize that there is need for improvement in hygienic arrangements if we would live up to reasonable standards for insuring prophylaxis. These considerations lead us to draw attention to the new "Sanitor" w.c. seat which has recently been brought to our

notice. Its chief features and hygienic merits are clearly indicated in the accompanying illustrations. It will be seen at once that the new seat greatly minimizes the possibility of contamination. The seat itself allows of easy and thorough cleansing. It is strong, simple, easily adjusted, and can be adapted to fit all forms of pedestal. It will also be noticed that there is no danger of it damaging the flush pipe. Moreover, it is inexpensive, neat, and efficient in service. The wood pads can be obtained in a variety of woods, either plain or polished, the best being mahogany and teak, and the fittings can be of galvanized iron, electro-brassed, lacquered, or nickel-plated.[1]

A SIMPLE HÆMOGLOBINOMETER.

The Ehrlich-Tallquist colorimetric method for the estimation of the percentage of hæmoglobin in the blood has proved itself of clinical service, and is particularly helpful for registering the progress of cases undergoing sanatorium treatment. A simple but effective Hæmoglobinometer based on this method has been introduced by the manufacturers of "Arseno-Ferratose," and, we understand, one of these ingenious and useful contrivances will be supplied to medical practitioners on application.[2]

TUBERCULIN PREPARATIONS.

Tuberculin has certainly come to stay. Slowly but surely it is increasing in favour. Of its value in certain cases there can be no doubt. Fortunately there is now no difficulty in procuring the various kinds of tuberculin in reliable and convenient forms. A number of well-known firms are now supplying tuberculin in suitable preparations for diagnostic and therapeutic use. Reference to some of these may be of service to our readers.[3]

[1] The prices ranges from 3s. to 10s. On application to the inventor and manufacturer, Mr. F. W. Bromley, engineer, Urmston, Manchester, full details regarding the "Sanitor" Patent W.C. Seat will be supplied.

[2] For full particulars apply to C. F. Boehringer and Soehne, manufacturers of "Arseno-Ferratose," Mannheim-Waldhof (Germany). Agents for the United Kingdom: Domeier and Co., Ltd., 8, Harp Lane, London, E.C.

[3] Meister, Lucius, and Brüning, Ltd., 3, Jewry Street, London, E.C., have prepared a brochure for medical practitioners, "The Tuberculins and their Employment in Diagnosis and Treatment of Tuberculosis." H. K. Mulford Company, of Philadelphia, U.S.A., issue a useful booklet, "Tuberculin and Tuberculin Therapy." Burroughs Wellcome and Co., London, E.C., in their "Serum Therapy, with Notes on Vaccines and Tuberculins," give serviceable information regarding tuberculin and tuberculin therapy. Allen and Hanburys, Ltd., 7, Vere Street, London, W., in a little manual on "The Tuberculins," give helpful tables of graduated doses. Duncan, Flockhart and Co., 104, South Cannongate, Edinburgh, have sent us specimens of their tuberculins, which are put up in forms which admirably meet the needs of medical practitioners. Parke, Davis and Co. have also sent us samples of their capillary tubes of old tuberculin for use in the De Carte Woodcock diagnostic test.

NOTES.

THE SEVENTH INTERNATIONAL CONGRESS ON TUBERCULOSIS.

THIS month, from April 14 to 20, the Seventh International Congress on Tuberculosis, postponed from last summer, meets in Rome. The membership fee is 25 francs, and subscriptions not already paid should be sent at once to Professor Vittorio Ascoli, Secretary-General of the Congress, 36, Via in Lucina, Roma. Members' relatives can obtain tickets for 10 francs each. Tickets for travel are being arranged for at reduced rates. Messrs. Thomas Cook and Son, Tourist Agents, Ludgate Circus, London, E.C., are acting on behalf of British delegates, and will supply full particulars on application. In connection with the Congress the Tenth International Anti-Tuberculosis Conference will be held in Rome, April 11-13. Dr. Schmid, President of the Swiss Central Committee for Combating Tuberculosis, and Director of the Swiss Board of Health, has arranged for a "Voyage d'Etude" through Switzerland, preceding the Congress in Rome. Some of the chief Swiss health centres and sanatoria will be visited. The tour starts at Zurich on April 1.

NATIONAL INSURANCE AND TUBERCULOSIS.

The National Insurance Act provides means whereby a comprehensive scheme may be initiated and efficient measures organized and administered for a scientifically-conducted State campaign against tuberculosis. The Chancellor of the Exchequer has appointed a Committee to report at an early date upon the consideration of a general policy in respect of the problem of tuberculosis in the United Kingdom, in its preventive, curative, and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoria or other institutions or otherwise. The Committee consists of the following:

Waldorf Astor, Esq., M.P. (Chairman); Christopher Addison, Esq., M.P., M.D.; N. D. Bardswell, Esq., M.D., Medical Superintendent of the King Edward VII. Sanatorium, Midhurst; David Davies, Esq., M.P., President of the King Edward VII. Welsh National Memorial Association; A. Mearns Fraser, Esq., M.D., Medical Officer of Health, Portsmouth; Arthur Henderson, Esq., M.P.; A. Latham, Esq., M.D., Physician at Mount Vernon Hospital for Consumption; W. Leslie Mackenzie, Esq., M.D., Medical Member of the Local Government Board for Scotland; J. C. McVail, Esq., M.D., Medical Member of the National Health Insurance Commission (Scotland); W. J. Maguire, Esq., M.D., Medical Member of the National Health Insurance Commission (Ireland); Sir George Newman, M.D., Chief Medical Officer of the Board of Education; Arthur Newsholme,

Esq., C.B., M.D., Medical Officer of the Local Government Board; James Niven, Esq., LL.D., M.B., Medical Officer of Health, Manchester; Marcus Paterson, Esq., M.B., Medical Superintendent of the Brompton Hospital Sanatorium, Frimley; R. W. Philip, Esq., M.D., Honorary Examining Physician, Queen Alexandra Sanatorium, Davos, and Physician of the Royal Victoria Consumption Hospital, Edinburgh; H. Meredith Richards, Esq., M.D., Medical Member of the National Health Insurance Commission (Wales); T. J. Stafford, Esq., C.B., F.R.C.S.I., Medical Member of the Local Government Board for Ireland; Miss Jane Walker, M.D., Medical Superintendent of the East Anglian Sanatorium, Nayland, Colchester; F. J. Willis, Esq., one of the Assistant Secretaries of the Local Government Board; J. Smith Whitaker, Esq., Medical Member of the National Health Insurance Commission (England). The Secretary to the Committee is O. B. Clarke, Esq., barrister-at-law.

TUBERCULIN DISPENSARIES.

The Tuberculin Dispensary League of which the Hon. Secretary is Mrs. Beatrice Erskine, 10, Ovington Gardens, London, S.W., is advocating and assisting the establishment of tuberculin dispensaries modelled after that conducted by Dr. W. Camac Wilkinson, at 263, Kennington Road, London, S.E, on Tuesday and Friday mornings, 9 to 12 a.m. Dispensaries carrying out tuberculin treatment according to the method advocated by Dr. Wilkinson are being conducted by Dr. Annie McCall, in Albert Bridge Road, Battersea, and Dr. Lena Fox, at 44, Grange Road, Bermondsey. Centres have also been established at Aldershot, Birmingham, Cardiff, Dublin, Greenwich, Inverness, Irvine (Ayrshire), Leith, Leicester, Manchester, Monastrevan, Naas, Portsmouth, Sheffield, and Street (Somerset). At many other places plans are being considered, and there seems to be a certainty that many new tuberculin dispensaries will be established speedily in various parts of the kingdom.

A NATIONAL TUBERCULOSIS BUREAU.

In previous issues of this journal we have advocated the establishment of a National Tuberculosis Bureau. The time has now arrived when such a Centre has become a necessity. Under the provisions of the National Insurance Act the State is now undertaking most important enterprises in connection with our Anti-Tuberculosis Campaign. If the new powers are to be used for the conduct of the wisest measures and so that the best results may be attained, the most reliable information must be available for all. This can only be provided for by the establishment of a National Tuberculosis Bureau.